THE EFFECT OF CONDITONING ROLLS, FEED RATE AND THE NUMBER OF PASSES ON FORAGE DRYING RATE

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THE EFFECT OF CONDITIONING ROLLS, FEED RATE

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PREFACE

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CHAPTER I

INTRODUCTION

Relevance of the Research

Hay is produced in every state in the U.S.; in 1975 about 121 million metric tons of hay were harvested from more than 25 million hectares. The state of Oklahoma in the same year harvested 710 thousand hectares. This was a production of about 3.39 million metric tons which ranked twelfth in production and harvested area for 1975 in the U.S.

Alfalfa is the most common hay crop. In 1975, it was grown on more than 6.9 million hectares in the U.S. and 208.5 thousand hectares in the state of Oklahoma with a production of about 71 million metric tons and 1.5 million metric tons, respectively. Table I shows alfalfa and alfalfa mixture areas and production for states producing more than 1 million metric tons in the U.S.

Alfalfa cultivation amounted to about 28% of total hay acreage for 1975, and about 44% of 1976 preliminary estimates. This indicates a high demand for more hay production.

In hay making, one factor that cannot be controlled is the weather. Rainy damp weather can account for severe quality losses on windrowed or square baled hay left in the field. Curing hay without excessive loss is an important part of an efficient operation. The

TABLE I

ALFALFA AND ALFALFA MIXTURES AREA AND PRODUCTION FOR STATES ABOVE 1 MILLION TONS 1975-1976

No.	State	Area Harvested 1,000 Hectares		Production 10,000 Metric Tons	
		1975	1976*	1975	1976*
1	AZ	87	85	1,368	1,336
2	CA	453	445	6,007	6,000
3	CO	299	287	1,682	1,743
4	ID	417	413	3,465	3,292
5	IL	312	295	2,310	2,256
6	IN	170	162	1,145	1,091
7	KS	801	405	2,539	2,500
8	MI	405	397	2,500	2,316
9	MN	890	886	5,900	4,181
10	MO	214	202	1,253	1,045
11	MT	498	473	2,572	2,340
12	NB	688	688	4,173	3,864
13	NY	376	401	2,283	2,430
14	ND	668	656	2,850	1,915
15	OH	212	223	1,405	1,475
16	OK	208	202	1,475	1,455
17	OR	170	170	1,222	1,260
18	PA	332	332	2,013	2,050
19	SD	1,052	931	3,545	1,673
20	UT	186	186	1,338	1,464
21	WA	202	202	1,591	1,636
22	WI	1,222	1,218	7,825	6,020
23	WY	190	188	1,025	994
TOTAL U.S.		6,917	10,747	76,751	63,555

*Preliminary Estimates.

Source: Agricultural Statistics 1977 United States Department of Agriculture, pp. 271

usual locations used for curing hay are the field, the barn, and the dehydrator. Field-curing is prevalent in the United States and over the world because it is inexpensive, but losses in quality and quantity are greater than with the other two methods.

Work has been done at several locations in the United States. Since 1933, (Zink, 1933; Bohstedt, 1944; Jones and Dudley, 1948; Bruhn, 1955 and 1959; Casselman and Finham, 1960; Pedersen and Buchele, 1960; Kepner et al., 1960; Hellwig, 1965 and 1977; Barrington and Bruhn, 1970; Priepke and Bruhn, 1970; Straub and Bruhn, 1975) have proved the positive effect of mechanical conditioning on reducing the required field curing drying time compared to unconditioned hay.

Since the leaves of hay dry more rapidly than the stems (Pedersen, 1959); by the time the stems have reached a moisture level sufficient for storage (20 percent wb), the leaves have been over-dried. This excessive drying of the leaves only serves to increase shattering losses in subsequent operations. Studies conducted related to conditioning rolls have shown that cracking the hay stem exposes more area for moisture loss and thus speeds the drying rate of stems more than leaves. This causes an equalizing of the leaf and stem drying rate and decreases losses (Pedersen, 1959).

Manufacturers have used different ratios of cutter bar width to conditioning roller width. This changes the feed rate through the rollers significantly, as does the variation of feed rate due to variation of ground speed and yield. Information about the feed rate effect is required to know which type of roll will be more suitable for the higher "width of cutter bar/width of rollers" ratio.

Bruising of the plant stem from using a cycle mower by Shepperson et al. (1974) showed an increase in the drying rate but there was no information found about effect of such type rollers.

Scope of the Investigation

The study described in this thesis was designed to evaluate the effect of feed rate, the number of passes, the type of rollers and compare the performance of a new type of roller with four different common commercial rollers in a defined laboratory condition.

A stationary conditioning system with capability of producing single or double hay crushing, crimping and bruising by rollers of different shape and size, variable speed and feed rate and pressure was used. Samples were treated under constant pressure, different levels of feed rate, and number of passes. Five types of rolls were used. Samples were dried under controlled temperature and relative humidity conditions. The weight was recorded automatically with six cantilever beam transducers. Finally, samples were transferred to high temperature drying ovens for dry matter determination.

A factorial split-split block in time design in two seasons with two and five replications for thirty factorial treatment combination was used to determine drying rate of alfalfa and its relation with type of roll, number of passes and feed rate.

Objectives

1. To determine the most effective type of roll which increases the drying rate of the forage.
2. To determine the effect of the number of passes through the

rolls on drying rate.

3. To determine effect of feed rate on drying rate.
4. To compare the relative effect on the drying rate of forage of a bruising type of roll with crushing and crimping types.
5. To develop a prediction equation for predicting rate of drying in time.

CHAPTER II

REVIEW OF LITERATURE

Following World War II, changes in methods and equipment for hay handling began to take place rapidly and by the middle 1960's the man-power required to produce a ton of hay had been reduced to one-third of that required 25 years earlier according to Butler (1970). The farming operation required to produce a good seeding and to grow an alfalfa crop are well established. The difficult part of alfalfa production occurs in harvesting the forage so as to save the maximum feeding value. These difficulties in hay harvesting are found throughout the humid regions of the world. They are due in part to the fact that the period of time between rains is less than the time required to cure the hay and transport it to the barn.

There are two general ways to harvest and store forage crops -- making them into silage or drying them. There are two ways to dry them -- naturally (field curing) and artificially. Artificial drying is done also in two ways -- barn finishing or dehydration. Barn finishing has received a great amount of attention since 1940; the forage is partly dried in the field, then it is placed in a mow, and natural or heated air is forced through the forage to complete the drying.

In artificial dehydration, the forage is taken from the field as soon as it is cut (in some instance it is allowed to wilt), chopped and passed through suitably constructed drying chambers where it comes in contact with heated air. This rapidly evaporates the moisture in it. The rate of drying depends on the amount of water in the forage, the temperature and humidity of the surrounding air, and the kind of forage and texture of the plant. The artificial drying generally produces forage of higher feeding value than natural drying and losses of nutrients are also somewhat smaller. The introduction of artificial aids to replace the natural drying generally adds to the costs. The relative advantages of such aids, therefore, must be weighed against the cost in individual situations.

Gray (1948) has pointed out that dehydration is naturally more expensive than when the hay is left in the field to dry for 1 or 2 days to approach a moisture content of 20 to 40 percent.

For all of the previously mentioned methods, the drying cost will decrease as higher drying rates are provided during field curing and the amount of losses will be decreased as the difference in drying rate of leaves and stems is decreased.

Several methods have been used to decrease the field curing time.

Chemical Application

Chemical application serves in two ways to decrease the field curing time.

a. By increasing the drying rate.

b. By increasing the maximum allowable moisture content for safe storage.

Tullberg (1976) has treated lucerne by rapid immersion in aqueous potassium carbonate solution (0.18 M) under laboratory conditions which has resulted in a substantial increase in simulated field drying. In field experiments done by Tullberg again on lucerne, the field results have supported the laboratory results. Lucerne treated with heavy applications (3000 liters per hectares) of .18 M aqueous potassium solution has dried faster than severe mechanical conditioning. At a lower application rate (200 liter per hectares), potassium carbonate treated lucerne was significantly drier than untreated material.

Knapp et al. (1975) reported on a study conducted to determine the effectiveness of anhydrous ammonia (NH_3) as a preservative to prevent microbial activity and consequent dry matter and digestibility losses in hay that was intentionally or unintentionally stored at moisture levels above 20 percent. Alfalfa baled at 32 percent moisture content was treated with ammonia (NH_3) at 1.0 percent level of the weight of the hay and lost 5.2 percent less dry matter than did untreated alfalfa.

Manby and Shepperson (1975) has reported that if propionic acid at a 2 percent level by weight can be uniformly distributed, it seems likely that it will inhibit mold development on hay having up to 35 percent moisture content.

Also, Bush (1977) has reported that an application to hay of 20 percent propionic acid and 30 percent formalion at 1 percent rate of the weight of hay and with the hay stored at 30 percent moisture content (wb) will result in a quality of that approximately equal to any baled hay under ideal conditions, i.e., about 18-22 percent moisture content (wb).

Hot Water Blanching

In a study conducted by Priepke (1970), a blanching treatment was performed by dipping the cut alfalfa into boiling water for 10 seconds. The results indicated that for treated samples the same level of water remained after about 3 hours and it approached a point where only 20 percent of the original water content remained after five hours and forty minutes. In this same time period, the untreated sample approached about 28 percent of the original water content.

Flaming

The flaming treatment was performed manually on the cut alfalfa with a propane torch. The alfalfa was flamed such that occasionally brown scorch marks appeared on the surface. The results reported by Priepke (1970) indicated that the treated sample approached 0.2 fraction of water remaining at about three hours and forty minutes after cutting while the control was approached about .39 fraction of water remaining.

Mechanical Treatment

In 1933, Zink reported that the alfalfa hay passed through a set of rolls, one made of steel and the other steel covered with rubber, had dried faster than ordinary mowed hay. He also reported that the rate of drying in stems was much slower than leaves. Under field curing conditions when there was 30 percent moisture in the complete alfalfa plant, he observed only 16 percent moisture content (wb) in leaves while the stems had 38 percent (wb) moisture content. Kiesselback and Anderson (1926), earlier under laboratory conditions, had obtained similar results. They found that first cutting alfalfa hay with 20 percent moisture (wb) was composed of leaves containing 12 percent and stems containing 27 percent moisture (wb).

Zink (1933) with observed data concluded that if 25 percent moisture content is a safe moisture level for storage, the crushed hay could be stored 4 hours after cutting while non-crushed hay did not reach 25 percent moisture content until 9:50 a.m. on the second day. As a result, the rolling and crushing would have permitted cutting it in the morning and placing it into storage in the afternoon.

Salmon, et al. (1925) found that over seven seasons of cuttings, including four stages of maturity, an average of 19 percent of the leaves was lost. This loss was found to vary from 2.3 percent to as much as 34 percent.

Similar works have been carried on with crushers in the early 1930's with a machine designed by Cushman and were conducted by Alvos (1932), Madson and Bainer (1930) in cooperation with the Food Machinery Corporation, San Jose, California. The early machine was a self-propelled unit and consisted of a cutter bar and draper similar to a grain binder platform with a set of crushing rolls fed by the platform draper. The machine was equipped with a spreader to redistribute the crushed material on the ground. Corrugated rubber-covered steel rollers were used on this early machine, and it was equipped with rotating brushes to keep the rolls clean. Later, the machine was redesigned with the crushing rolls parallel to the cutter bar and of essentially the same length.

This later machine was equipped with one smooth rubber-covered roll and one smooth steel roll. Subsequent experimental works by Smith and Jones (1939), Reed (1932), and Jones and Dudley (1948) were carried on with crushers at agricultural experiment stations. These crushers picked the forage out of a swath and crushed it, some also were a combination mower-crusher. These machines varied considerably in detail, some being engine driven and some driven by tractor power take-off.

Later, experimental work was carried on with commercially available or experimental machines.

Bruhn (1955) reported seven years of investigative findings with a commercial machine and one experimental machine as follows:

a. Greatest gains in drying rates were experiences when drying conditions are very good, and the advantage of crushing diminished gradually with poorer drying conditions until the point is reached where neither crushed nor uncrushed forage dries.

b. Also greatest gain in drying rate was achieved with a higher number of passes, that is, 3 times crushed dried faster than did 2 times, 1 time or no crushing at all; 2 times crushed dried faster than 1 time and no crushing but slower than 3 times crushed.

c. Roll pressure up to a certain point was effective in increasing the drying rate; as the pressure per linear centimeter of roll length was increased, a higher drying rate was achieved.

d. An increase in the ratio of roll surface speed to ground speed had shown a trend to raise the drying rate. He also pointed out that under certain conditions, forage crushing may bring about clipping and stripping of small stems and leaves from the main plant stem.

Bruhn (1959) reported on the effect of delayed crushing and the relationship of drying rate and clipping of leaves and small stems from the main stem as a result of crusher or conditioner action. Data collected from smooth steel-roll crusher and bar-type corrugated-roll crusher indicated that the uncrushed material and the advantage of higher drying rate of the crushed material was lost for the extent of the delay. After crushing had taken place, drying had proceeded essentially at the same rate as for a sample of comparable hay crushed immediately after cutting. The results also indicated that losses were inversely proportional to ground speed and that the amount of losses in samples treated with the smooth steel roll were higher than for the untreated hay, and were lower than for flail-type chopper conditioned hay.

Boyd (1959) classified conditioning rolls as either crusher or crimpers and from collected data from field experiments concluded that, in general, crushing was somewhat more effective than crimping timothy-brome mixtures. Flail cut material had the most rapid drying rate but he also pointed out that, one apparent disadvantage appears to be the greater overnight moisture pickup in the conditioned crop. However, this was largely offset by virtue of the more rapid loss of moisture during the morning hours.

Kurtz (1968) and Halyk (1966) reported results that were opposite of that of Boyd (above) in that crushed hay dried faster than flail mower treated hay. However, Hall (1964) had results that agreed with Boyd's results. Hall listed the advantages of hay conditioning as follows:

a. Speeds field curing; conditioning can reduce drying time by about 30 percent.

b. May prevent weather damage by shortening the time that hay remains in the field after cutting. This improves the chance of putting it up without damage.

c. Field losses due to shattering are reduced as drying time and the amount of turning and tedding are reduced.

d. Conserves color and feed value through shorter exposure to sunlight and less shattering.

Steam

Byers (1966) applied steam, crimping and steam-crimping treatments to field samples of alfalfa collected at the pre-bloom stage of maturity -- and placed the samples in a laboratory experimental dryer at 36° C and 28 percent relative humidity. Plotted data indicated that after two hours and fifty minutes of drying that the control, steamed, crimped, and steamed-crimped samples had approached about 41, 29, 25, and 9 percent moisture content (wb), respectively. He also pointed out that the steamed-crimped treatment caused the epidermis to be cracked and the cells to be split apart toward the pith. Also, the breaking of a few cells was observed; this breaking caused more cells to be exposed to the drying air. However, as soon as these exposed cells dried, the drying rate again became that of an untreated plant. This indicates that the drying rate was limited to the decreasing permeability of the cell walls, cytoplasmic membrane, and/or stomata action. He also pointed out that chemical change was another mechanism which could be accounted for change in the cell wall permeability as an analysis of steamed and non-steamed alfalfa, after drying, indicated that the alcohol-soluable nitrogen had been doubled in non-steamed samples.

Crushing and Dipping in a Carbon Tetrachloride (CCl_4) Solution

Priepke and Bruhn (1970) reported on an experiment involving crushing, dipping in CCl_4 and a combination of crushing and dipping in CCl_4 (Table II).

Crushing with Heated Rolls

Crushing with heated rolls including three treatments was also reported by Priepke (1970). The results indicated that all treatments were dried faster than non-treated material. Hay crushed with rolls having a surface temperature of 182° C dried the fastest but hay crushed with rolls heated to 138° C had dried slower than crushing with rolls at ambient temperature. He pointed out that heating to 182° C may have had the effect of melting the cuticle to expose some of the stems surface resulting in less drying resistance.

Crushed and Microwave

This experiment was reported by Priepke (1970). The samples for this treatment were first crushed and then placed in the microwave oven for 5 seconds. The results indicated that the combined treatment of crushing and microwave drying dried slightly faster than a crushed treatment dried under ambient drying conditions.

TABLE II

FRACTION OF WATER* REMAINING AFTER 3 AND 4 HOURS

	3 Hours	4 Hours
Crush and Dip in Cl_4	0.09	0.08
Dip in Cl_4	0.21	0.17
Control - Crush	0.19	0.11
Untreated	0.45	0.35

$$\text{*Fraction of Water} = \frac{\text{Weight of water at time} = t}{\text{Initial weight of water in the sample}}$$

A report by Straub and Bruhn (1975) evaluated four sets of rolls under the laboratory conditions of a mean dry bulb of 32.7° C and a mean wet bulb of 20° C. This corresponded to relative humidity of 35 percent.

The results were:

a. An increase in roll pressure caused an increase in losses.

b. Driving only one roll of the intermeshing rubber conditioning roll pair significantly increased potential clipping losses over having both rolls driven (while others did not show the same effect).

c. In the treatment where both rolls were driven, the rubber intermeshing rolls had the lowest amount of loss, the conventional ribbed steel and tie-cord rolls were intermediate in their losses and the tie-cord intermeshing rolls had the highest losses.

d. An increase in roll pressure tends to increase the drying rate. This was true except in a one-roll driven situation where a tendency to decrease the drying rate was noted. The both-driven intermeshing rolls' drying rate also tends to decrease but the difference doesn't seem to be significant compared with a control treatment. In the case of rubber intermeshing rolls, Straub explains that the compliance of the rubber coating tends to reduce the effect of increase pressure. Surface deformation within the material decreases the effect of pressure. In the case of the tie-cord rolls, the conditioning is administered by two very stiff and aggressive surfaces which are continually in contact, thus having maximum effect as pressure increases.

e. The laboratory method allows for elimination of such factors as changing or unfavorable weather conditions.

CHAPTER III

EXPERIMENTAL EQUIPMENT AND SETUP

The System

Data for this research project were collected from a laboratory forage conditioning and drying system. The system consisted of harvesting, conditioning, partial drying, weighing and complete drying systems. To measure the samples wet weight, two scales with a sensitivity of 1 gram and .01 gram were used. The cooling system, partial drying oven and complete drying oven temperature were controlled by automatic thermostat controls. A nylon net with 2 clips was used for wrapping samples. Aluminum pans were used for the complete drying process. A brief description of the systems and equipment is presented below.

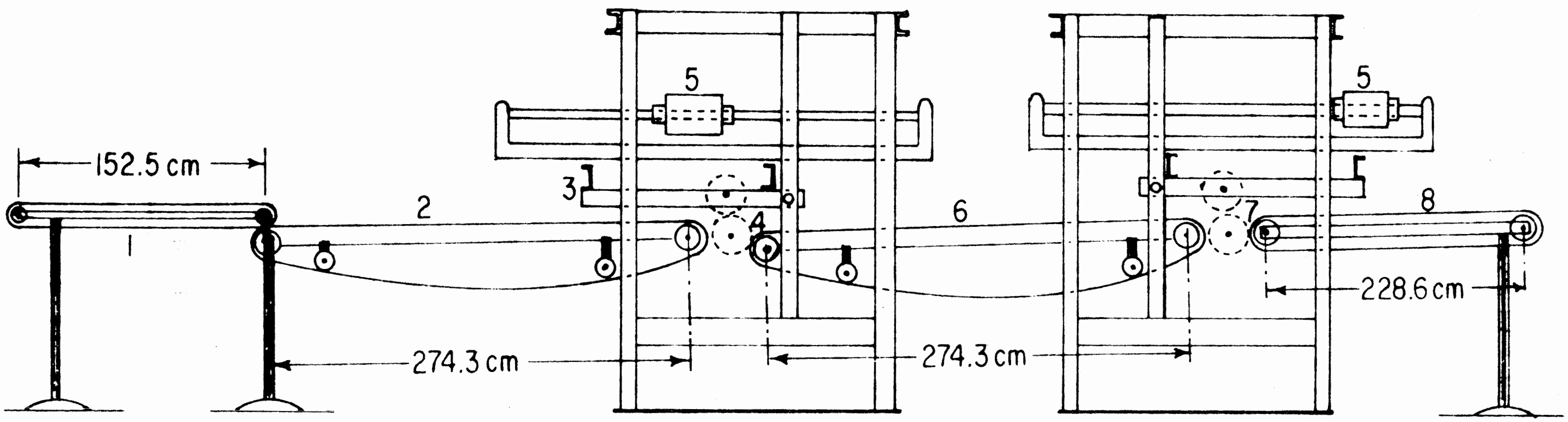
Harvesting System

Alfalfa was mowed with a Jarri mower (Figure 1) to a common height of approximately 3.75 to 5 cm.

Conditioning System

The forage conditioning system (Figure 2) consists of a hydraulic drive central panel (Figure 3a-b); conveyors (Figure 4); rolls (Figure 5a - 5e); and two sets of load systems (Figure 6).

Figure 1. Jarri Mower Used for Alfalfa Harvesting



1. The belt conveyor.
2. The chain conveyor.
3. The upper roll frame.
4. The set of conditioning rolls.
5. The moveable weight.
6. The chain conveyor.
7. The set of conditioning rolls.
8. The belt conveyor.

Figure 2. The Forage Conditioning System

The Hydraulic Power System (Figure 3b) consists of two 3 phase 1780 RPM electrical motors plus one main and several small hydraulic motors. The small 3.73 kilowatt-hours electrical motor served as a starter and the 56 kilowatt-hours electrical motor served to operate the main hydraulic pump. Several small hydraulic motors were used to provide independent operation of rollers and conveyors for variable speed. The control system consists of an electro-hydraulic panel (Figure 3a) with controls for four individual hydraulic motors. For each of the two sets of conditioning system, a control was provided for the roll speed and the conveyors' speed. The control panel included a control switch for the first belt conveyor's operation. The control panel also controlled the conveyors' and rollers' speeds independent of each other and for each conditioning system.

The conveyor system consists of four conveyors. The first one was a belt type and was used for hand distribution in different concentrations to simulate different feed rates. The second one was a stainless steel chain conveyor. It was used for feeding hay through the rolls. The third one was also a stainless steel chain conveyor and it was used for stopping samples of the "one pass" treatment as well as for feeding the second set of rolls for the "two passes" treatments. The fourth conveyor was also a belt type and it served for receiving conditioned hay from the second rolls and was stopped for taking samples from the conditioned hay.

Conditioning rolls were mounted according to factorial treatment requirements. Five types of rolls shown in Figure 5a to 5e were used. The specification of these rolls is given in Table III. Types 0, 1, 2, and 3 were cut and constructed from common existing commercial rolls.

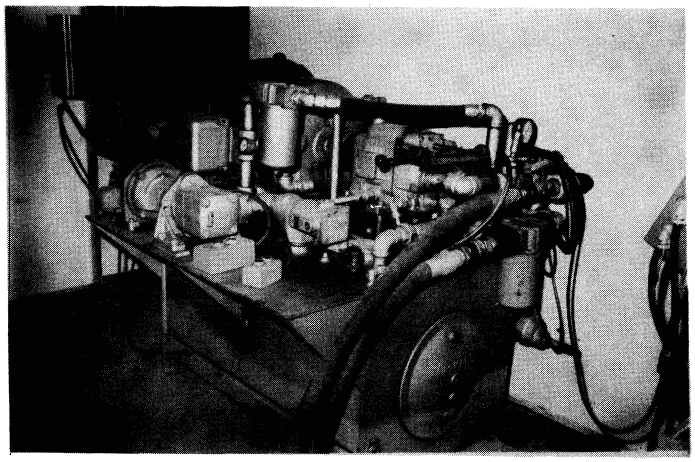


Figure 3a. The Hydraulic Power System

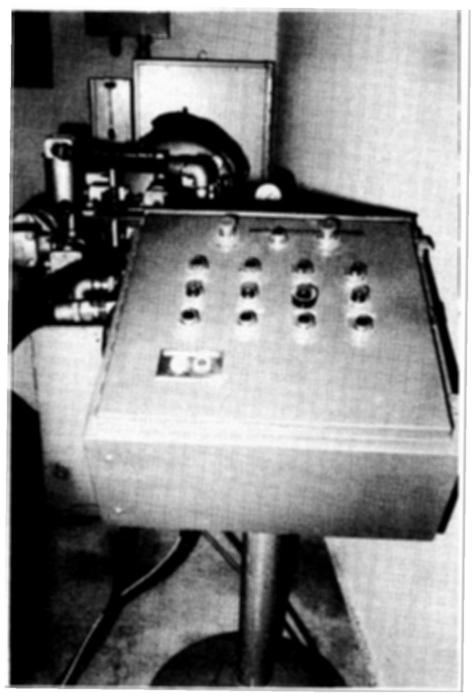


Figure 3b. The Control System Electric-hydraulic Panel

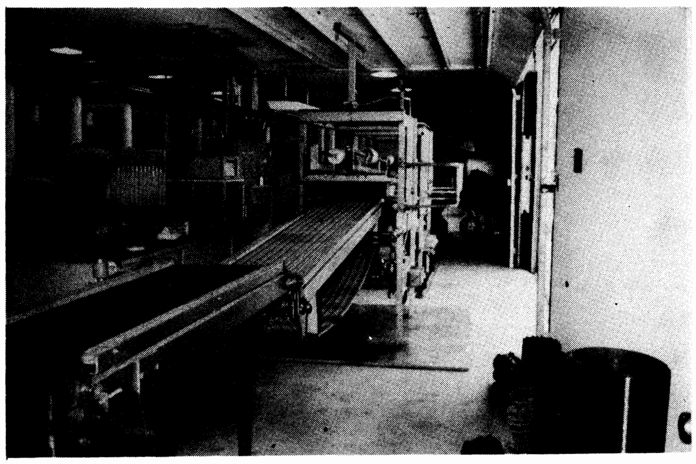


Figure 4. The Conditioning System with Belt and Chain Conveyors

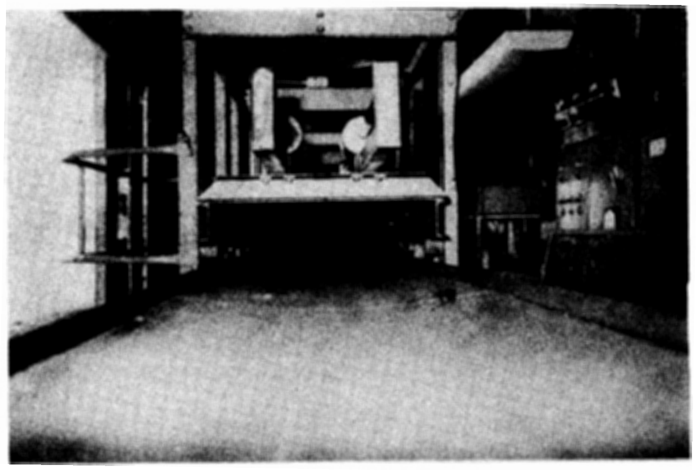


Figure 5a. Steel Tie-cord Rolls Mounted on the Conditioning System (0)

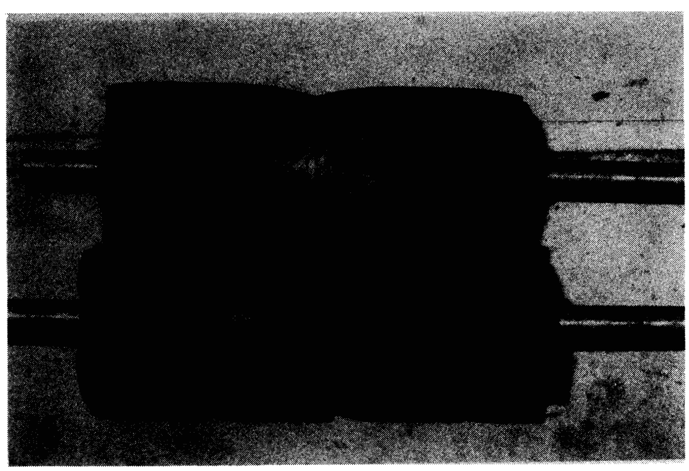


Figure 5b. Rubber Intermeshing Rolls (1)

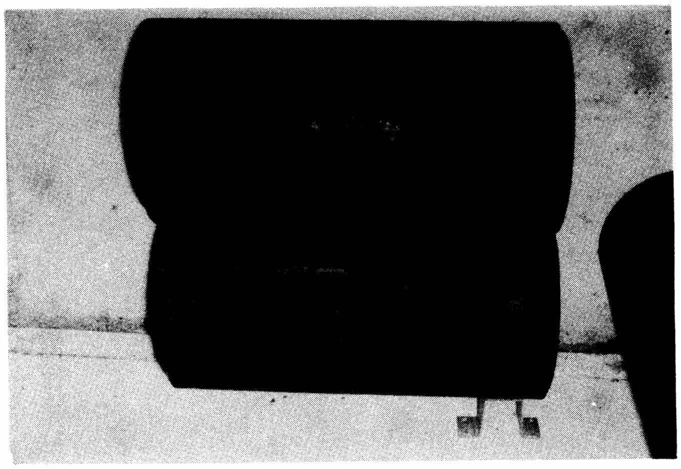


Figure 5c. Smooth Rubber Rolls (2)

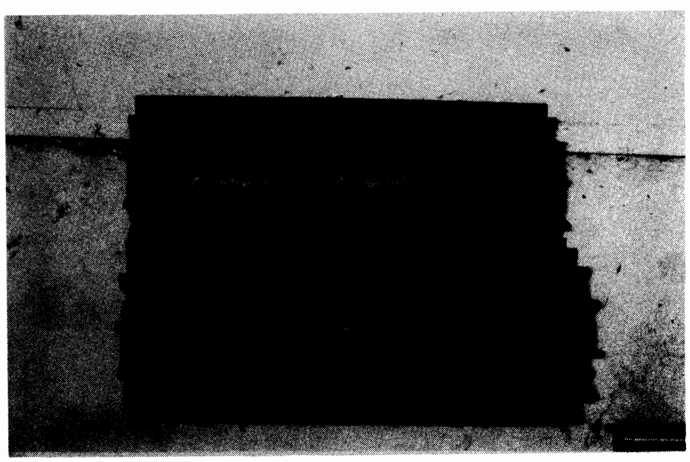


Figure 5d. Steel Crimper Rolls (3)

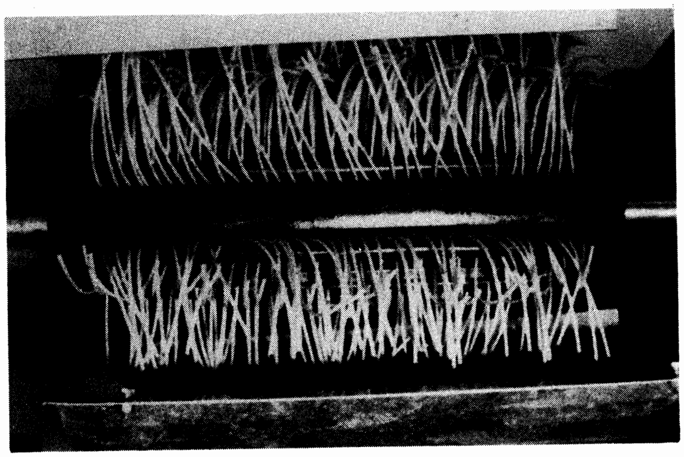


Figure 5e. Plastic Cord Rolls (4)

TABLE III

THE CONDITIONING ROLLS AND THEIR SPECIFICATION

Roll Number	Type of Roll		Width (cm)***	Do* (cm)	Di** (cm)	Roll Speed R.P.M.	Clearance cm
0	Steel - tie cord	Upper steel, channels 2.86 cm wide x 1.27 cm high	45.7	17.8	15.2	250	0.159
		Lower tiecord 4 grooves, 1.77 cm deep, 1.9 cm wide	45.7	17.8	15.2	250	0.159
1	Rubber Intermeshing (broken-gear type)	5.4 cm width, 1.59 cm height grooves	45.7	19.7	16.5	227	0.159
2	Smooth Rubber		45.7	24.1	--	182	0.159
3	Steel Crimper	0.635 cm wide x 2.22 cm height	45.7	19.7	15.2	227	0.159
4	Plastic Cord		45.7	39.7	7.9	500	--

*Do = Roll outer diameter

**Di = Roll inner diameter

***cm = Centimeters

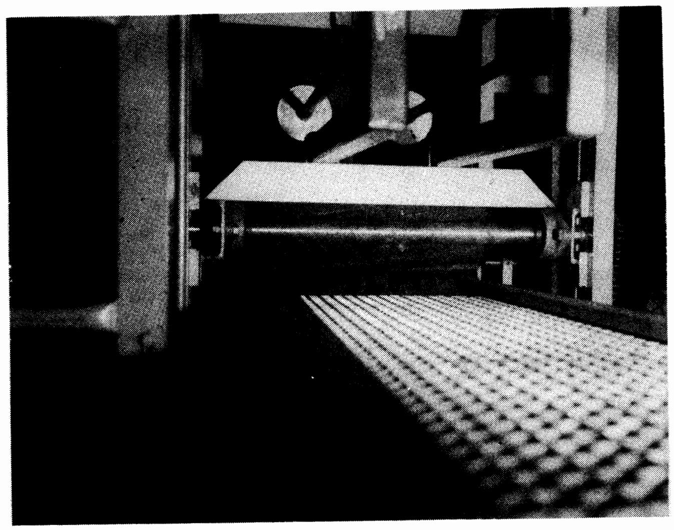


Figure 6. The Pressure Applying System with Frame Upper Roll on It, Two Bars, and Two Weights

The type 4, which was used as a bruising type roll, was made in the Oklahoma Cotton Research Station shop. It was made of nylon cords, each having a diameter of 3 mm. The length of each cord was 31.5 cm and were held in place using a 6.35 mm inner diameter pipe and a channel as shown in Figure 5e. These were attached to a core made of a 46 cm length of steel pipe with 8 cm outside diameter. The nylon cords were located on each bar 12.7 mm apart around the core surface. When in the conditioning system, the single roll was covered by a curved metal surface from above and with one from below. The upper cover was extended to behind the roll and was bent in a 35° angle to provide a deflector to contain the hay as it passes through the roll to provide more injury to the hay (Figure 7) as this was thought to possibly increase the drying rate.

The pressure was applied by a pivoted upper roll support frame which includes two bars, each with a moveable 22.6 kgs weight. The linear pressure per centimeter was a function of the location of the weight on the bar and the bar location on the upper roll frame.

Partial Drying System

The drying system was designed to dry six samples of alfalfa hay, up to 130 grams each, under controlled temperature and relative humidity conditions. It consisted of an air cooling unit, a fan, and the drying unit (Figure 8).

The cooling system[1] (Figure 9) had a capacity of 0.75 cubic meter

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[1]Lab-Line Ambi-Hi-Lo Chamber Cat. No. 355-17-3554-18, Lab-Line Instruments, Inc., Melrose Park, Illinois 60160.

Figure 7. Plastic Cord Roll with Upper and Lower Covers

Figure 8. The Partial Drying System, (Left)
The Cooling System, (Right)
First Drying Oven, and (Middle)
The Air Pump

and it takes in conditioned air from the laboratory room at the edge of the door. The cooling unit served as a refrigerator which produced saturated cool air at a controlled temperature. The cool air exited at the lower edge of the door and was moved by fan into the dryer unit.

The fan (Figure 10) was located between the cooling and heating units to receive the saturated air and to deliver it to the top of the drying oven.

The drying unit (Figure 11) served to receive the air and heat it to an adjustable temperature by virtue of a 500 watt heater.

A fan forced the heated dry air through the forage samples hanging on the cantilever beams. The edge of the oven was opened to the laboratory room for air to exit. The laboratory room itself was also air conditioned so it served as an air reservoir for the system.

Weighing and Recording System

The weighing and recording system consisted of six cantilever beams and a Beckman Type R Dynograph[2]. The beams (Figure 12a) were trapezoidal shaped, made of 4.76 mm 7075-T6 aluminum sheets 12.7 mm base, 8 mm top width and 28 cm length. Dual pattern strain gages were mounted on both the upper and the lower sides of the beam (Figure 13) to produce four active arm bridges thus creating a force transducer. The six cantilever beams were connected with shielded cables to the six channels of the Beckman Dynograph (Figure 12b). The system was

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[2]Beckman Instruments, Inc., 3700 River Road, Sheiller Park, Illinois 60176.

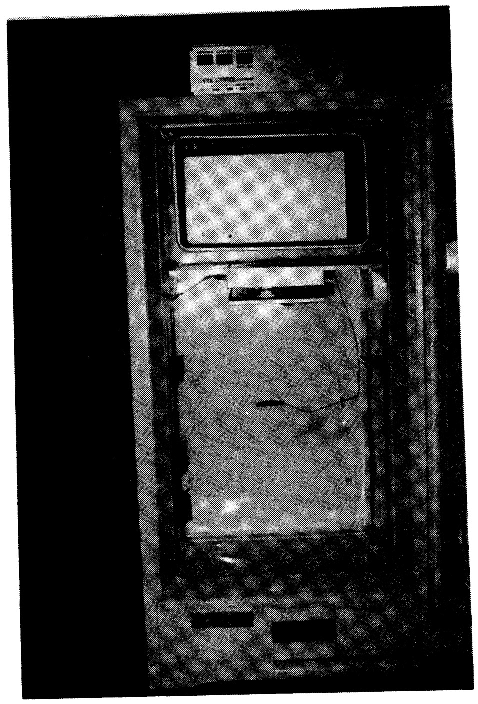

Figure 9. Cooling System with Recirculation Fan Below the Freezer and Cool Air Exit at Middle of Lower Edge

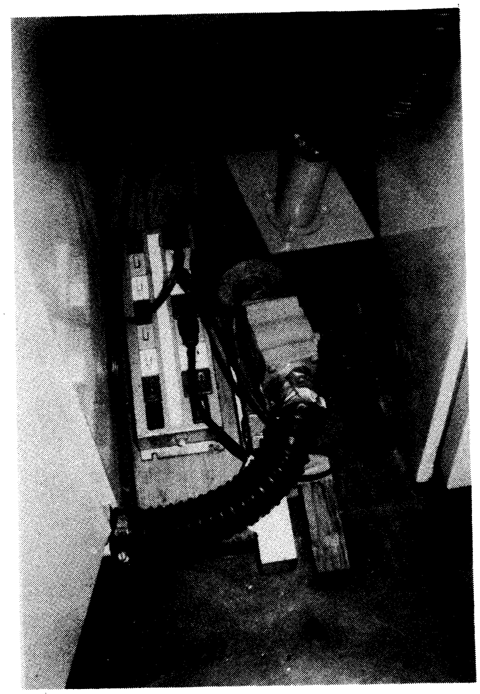

Figure 10. The Fan Located Between Cooling System and Oven, The Handle Is at Full Discharge Location

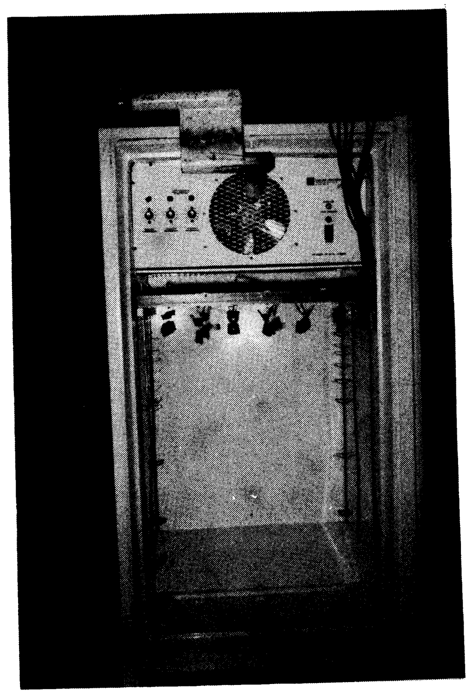

Figure 11. The Partial Drying Oven with Recirculation Fan and Cool Air Inlet, Heating Element, Cantilever Beams with Six 50 Grams Calibrated Weights at Upper Side

Figure 12a. The Weighing System with Six Cantilever Beams and Six 150 Grams Calibrated Weights

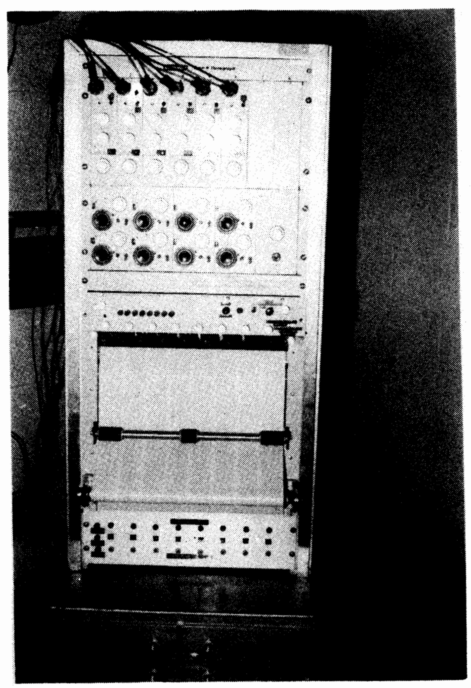

Figure 12b. The Beckman Type R Dynograph Six Channels Under Use

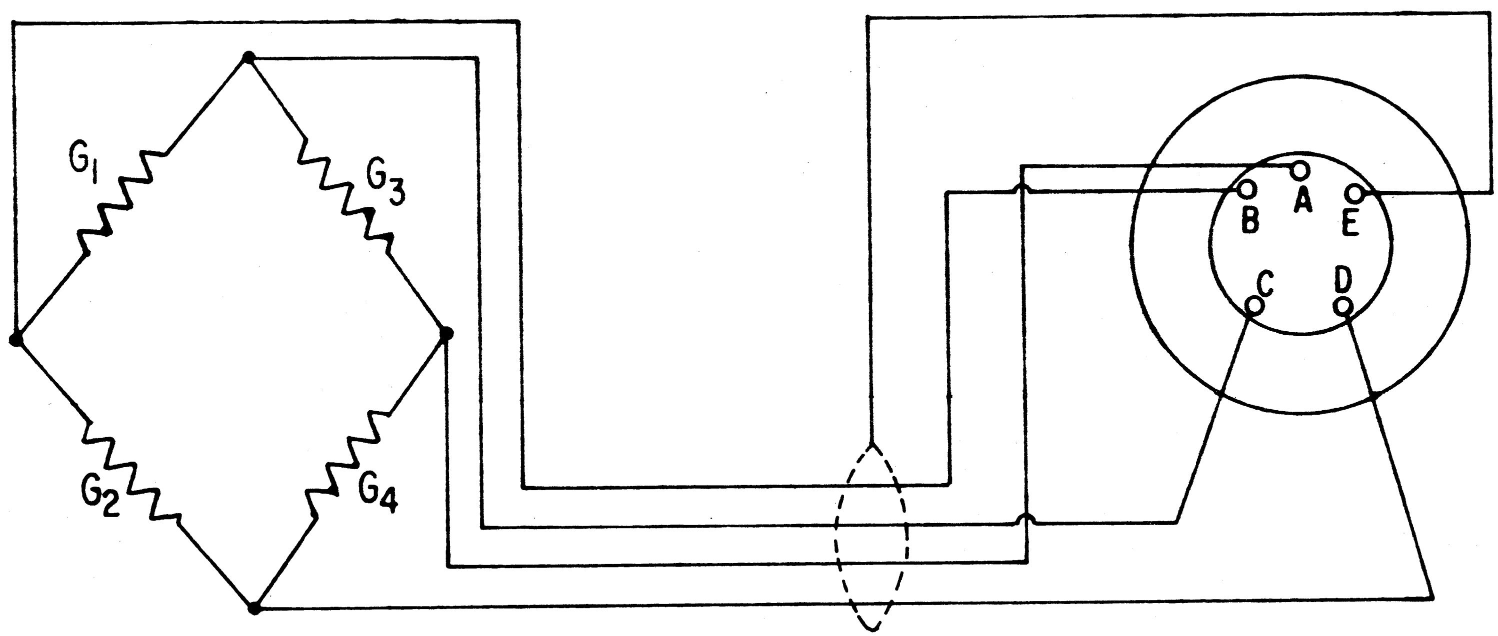

Figure 13. The Strain Gages Circuit on Each Cantilever Beam

temperature compensated by virtue of the strain gage circuit. It was calibrated to give sensitivity of 10 mv/cm which was equivalent to 50 g/cm.

Final Drying System

The final drying system includes an oven operating on 100° C temperature and aluminum pans 30 cm x 14.3 cm x 8.25 cm. This equipment was used to determine dry matter content of each sample (Figure 14).

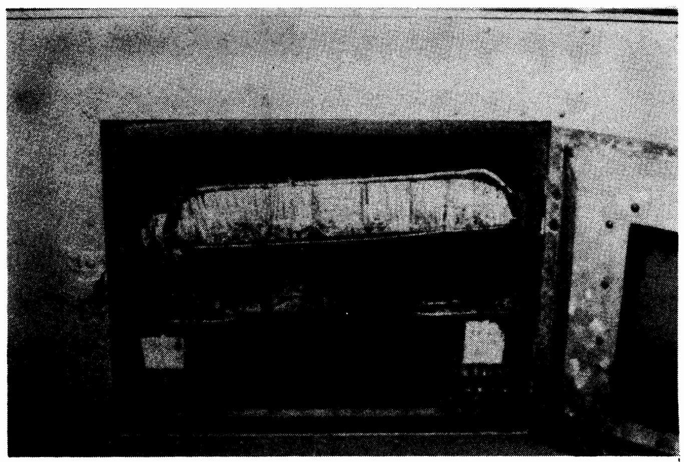

Figure 14. Aluminum Pans and Final Drying Oven

CHAPTER IV

PROCEDURE

Experiment Design

The experiment was conducted in split-split block in time design in two seasons -- season one with two replication, season two with five replications. To achieve more accuracy for the feed rate and the number of passes effects, they were randomly applied to sub-sub plots and sub plots, respectively.

The feed rate was chosen such that to simulate a yield of 3362 kg per hectare per cutting for a cutting width over roll length ratio of 1, 2, 3, as follows:

$$\text{Rate } 1 = 1614 \text{ g/m}^2$$

$$\text{Rate } 2 = 3229 \text{ g/m}^2$$

$$\text{Rate } 3 = 4842 \text{ g/m}^2$$

Five types of rolls shown in Figure 5a - 5e were randomly applied to the main plots. Pressure per linear centimeter, roll surface speed, ground speed (conveyors' speed), drying temperature, relative humidity, age of hay, rate of samples compaction and oven air velocity were considered as parameters and every effort was made to hold them constant.

Calibrations and Adjustments

The conditioning system was calibrated to provide 5.714 kg per linear centimeter. A digital force indicator and a load cell were used for this calibration measurement (Figure 15). The location of the weight on the bar, and the bar location on the upper roll frame was marked for easy checking during application of other treatments. The conveyor's speed was adjusted to 8 km/hr. During operation, it was checked and readjusted if required. A positive roller chain drive for each roll was provided. Timing was, therefore, automatic for the rubber intermeshing and crimper rolls. All rolls except the nylon cord was adjusted to run at a peripheral speed of approximately 5 percent faster than the conveyor speed to insure that the rolls would be self-feeding rather than the forage material force-fed by the conveyors.

Initial runs were made with the nylon cord roll to provide information as to its operation. Based upon these initial runs, 500 RPM was chosen as it did cause bruising on the stems with less damage to the leaves.

The cooling system was adjusted to cool the laboratory room air to about 15° C and the oven was adjusted to maintain a mean dry bulb temperature of about 37° C. This corresponds to a relative humidity of about 28 percent which simulates a good field drying condition. Drying conditions were kept constant for all tests and were monitored continuously during test runs so that the drying rate could be compared for the various tests.

To find the temperature gradient in the drying chamber, a test was run with six unconditioned field samples. The result was that no statistically significant difference existed between the samples' drying rate at the 95% level of confidence. Six channels of an 8 channel Beckman Dynograph Recorder was used for recording the weight of each of six samples. The recorder was carefully calibrated before each drying

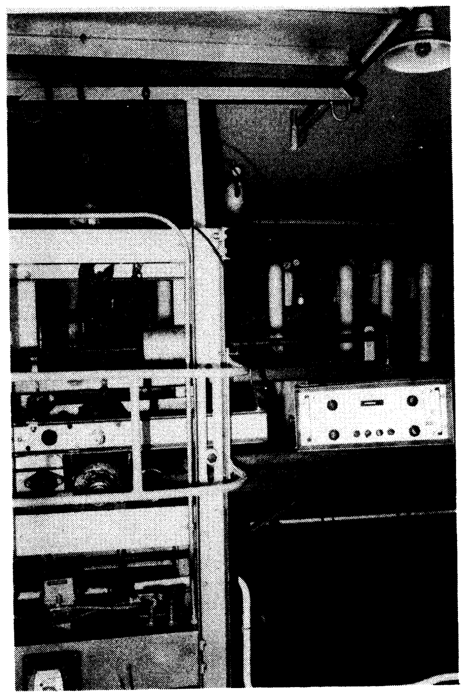

Figure 15. Equipment Setup for Pressure Calibration

run.

Since the minimum chart recording speed was .1 cm/sec, the paper driving motor was operated for short periods during the experiment to save on chart paper. A programmable timer system was added to the Beckman Dynograph Recorder to give short time recording signals.

The timer was adjusted such that it was cutting off the main signal after 30 seconds. The recording length per signal was about 3 cm long. To achieve full information about samples weight changes, the timer was programmed to give 13 signals with half-hour intervals for the first six hours and one signal for the final four hours of the partial drying period. This gave 14 weight recordings for each of the six samples over a 10-hour period.

Fresh Hay Supply

To provide the same age alfalfa for repeated runs of the different treatments, an area of about 46.5 square meters of alfalfa was selected -- each two to three days, a 4.6 square meters area was cut to provide hay with the same growth period for each treatment to be run. Harvest for conditioning was done when alfalfa was 33 days old and at about complete bloom stage. Since the yield of 4.6 square meters in some plots was not enough for some runs in the first two replications (Season 1), a larger area was selected, irrigation provided, and a new cutting schedule developed for the last five replications (Season 2) (Figure 16).

9-23-77 35 10-29-77 0	9-13-77 25 10-18-77 0	9-12-77 25 10-17-77 2	8-29-77 16 10-03-77 3	8-26-77 15 9-30-77 2
9-23-77 34 10-28-77 4	9-14-77 27 10-19-77 2	9-09-77 24 10-14-77 1	8-30-77 17 10-04-77 2	8-25-77 14 9-29-77 3
9-22-77 23 10-27-77 2	9-15-77 28 10-20-77 3	9-08-77 23 10-13-77 0	8-31-77 18 10-05-77 0	8-24-77 13 9-28-77 1
9-21-77 32 10-26-77 3	9-16-77 29 10-21-77 4	9-07-77 22 10-12-77 4	9-01-77 19 10-06-77 1	8-23-77 12 9-27-77 4
9-20-77 31 10-25-77 1	9-19-77 30 10-24-77 1	9-06-77 21 10-11-77 3	9-02-77 20 10-07-77 4	8-23-77 11 9-26-77 0

Figure 16. Layout of Experiment at Field; Numbers in Each Plot Are Representative of: 1st - The Date of First Cutting; 2nd - The Plot Number; 3rd - The Actual Date of Harvest; 4th - The Roll Used for Conditioning

Treatment Application

For a typical day's run the pans and the nylon sample nets were placed in both the complete and partial drying ovens (to be sure that they were dry the night before each main plot treatments were applied). In the morning, the cooling and partial drying units adjustments were checked. The Beckman Dynograph weighing and recording system was also calibrated by placing six 150 gram calibrating weights on the cantilever beams. The nylon nets and the clips were calibrated and kept associated with their respective cantilever beams. These were moved to the laboratory and placed in sequential order. The forage conditioning system adjustment was checked.

According to the randomization design, specified areas of alfalfa were harvested after dew was off. The harvested alfalfa was placed in a plastic cover to prevent moisture losses and moved to the conditioning laboratory. Measurements were made for the proper conveyor feed rate (Figure 17) and the hay was distributed uniformly on the first (belt) conveyor (Figure 18). The arrangement of hay on the conveyor was such that the alfalfa plants were fed with the stem end first and perpendicular to rollers' axes (Figure 19). The treated hay was stopped for the one pass on the third conveyor and for two passes on the fourth conveyor (Figure 20). For each sample, 130 grams of hay were randomly selected from six locations of the conditioned hay and wrapped in the nylon net with two clips for a total of 150 grams (Figure 21). Again, it was placed under a plastic cover to prevent moisture loss while waiting for other conditioning treatments to be run (Figure 22).

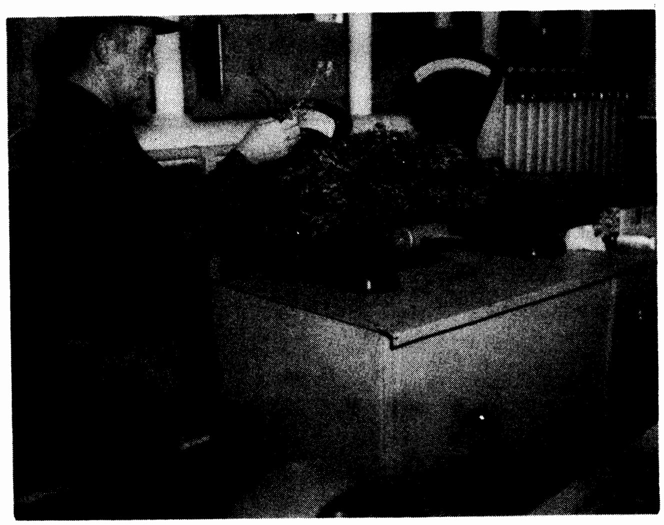

Figure 17. Weighing Hay for Uniform Distribution Over First Belt Conveyor

Figure 18. 1800 Grams Hay Distributed Uniformly Over 0.372 Square Meters of First Conveyor to Simulate Third Level of Feed Rate

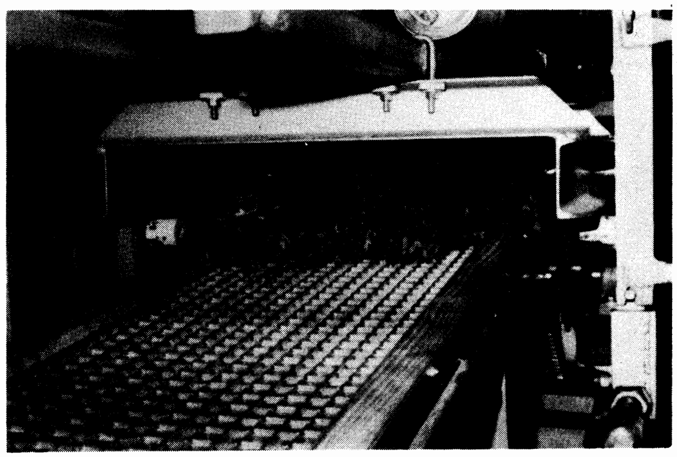

Figure 19. Orientation of Hay Passing Through the Conditioning Rolls

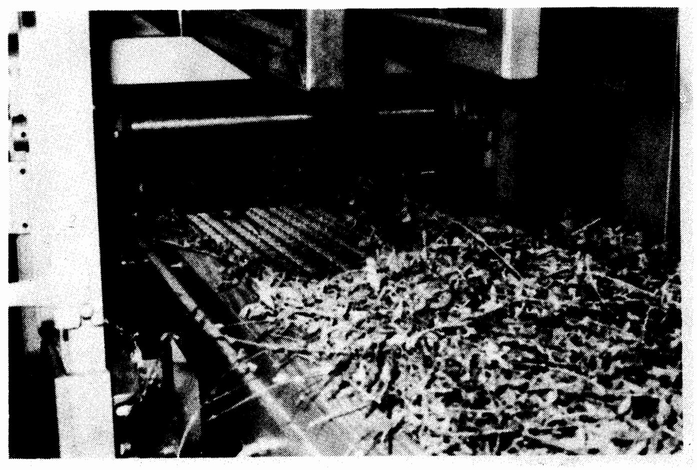

Figure 20. The Treated Sample with Steel-tiecord for One Pass, Stopped at Third Conveyor

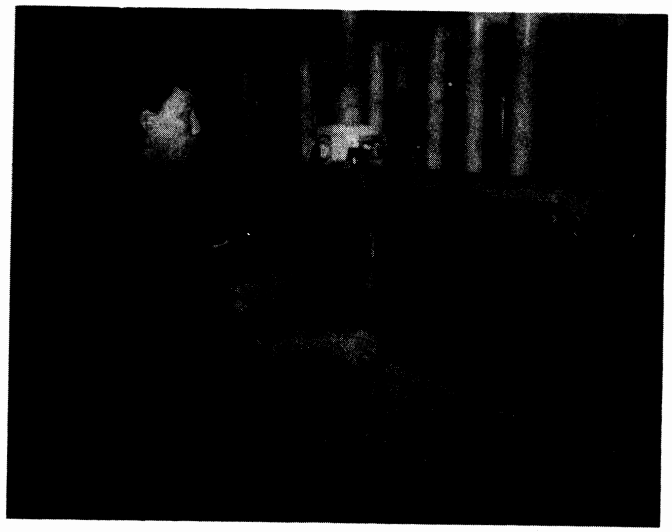

Figure 21. Weighing Hay with Nylon Net and Clips to Nearest 150 Grams

Figure 22. Covering Treated Samples with Plastic to Prevent Moisture Losses

When all six conditioning treatments (of one main plot) were completed, all were moved to the drying room and hung on the cantilever beams (Figure 23). Weight recording was done as samples were placed in the partial drying oven and the timer was adjusted as close as possible to record the samples' initial weight as soon as possible. On the chart paper, the weight of samples were recorded fourteen times during 10 hours; in one-half hour intervals. The accuracy of the recorder after a ten hour drying period was checked by weighing each sample with a sensitive scale with accuracy of .01 gram and recording this weight.

Samples were transferred from the nylon net to aluminum pans to the complete drying oven for dry matter determination (Figure 14). The drying period was 22 hours with the oven set at 100° C.

Statistical Analysis

The drying data was recorded on the Beckman Dynograph chart paper as mv/cm and was converted to grams as associated with the time of drying. The statistical analysis included the analysis of variance for different treatments and the least significant difference in drying rate of different rolls. The general linear model (regression) with different types of dependent variables (which describes the drying pattern of conditioned hay as a function of time) was fit to the data. The prediction equation for drying curves was developed and a confidence limit interval at the 95 percent level was calculated.

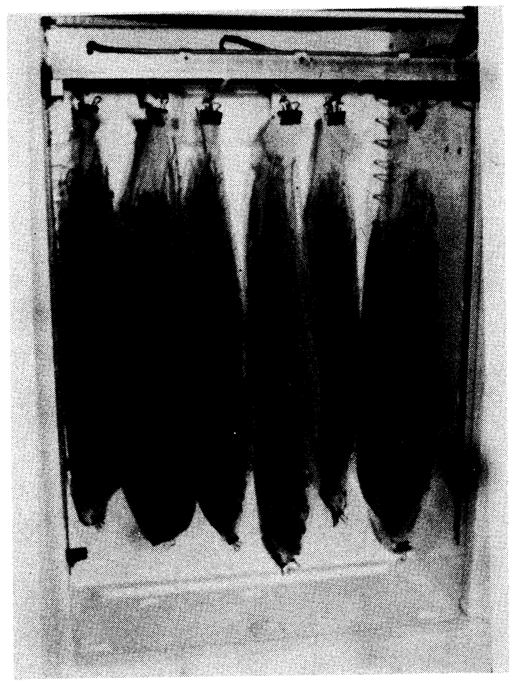

Figure 23. Treated Samples Located on Cantilever Beams in Partial Drying Oven

CHAPTER V

ANALYSIS OF DATA AND DISCUSSION OF RESULTS

The curves of evaporation obtained from this research are shown in Figure 24a through 28b. They indicate that only when the stem surfaces were crushed, crimped or bruised, the rate of evaporation from the alfalfa was increased. The drying rate curves showed high evaporation during the first and second hour after cutting. In the third hour of drying, the rate of drying was lower but still of considerable amount. An average of 50 percent of the total moisture was evaporated during the first three hours after conditioning. Between three hours after cutting and equilibrium moisture, the evaporation rate was nearly constant and was considerably less than during the first hour of drying. The decrease in drying rate may be the result of the loss of surface opening caused by the progressive closing of stomata. Because of a decreasing turgor pressure in the guard cells, most of the stomata may be closed after two hours of drying. This is in agreement with results reported by Petersen (1959) except the drying rate was about 8 percent higher than reported by Petersen. This was thought to be due to the higher temperature and the lower relative humidity used in this experiment.

After three hours, evaporation takes place only through the cuticle and possible wounds caused by mechanical treatments. Thirty different treatment combination drying curves (percent moisture content vs. time) are shown in Figures 24a through 28b.

Steel Tie-cord Rolls

The drying curve for the steel tie-cord rolls for one pass are shown in Figure 24a. These curves indicate that the drying rate for feeding rates one and two is nearly the same, and that they dried better than feed rate three. Figure 24b indicated that for two passes, all three feed rates have dried nearly at the same rate. This could be due to more effectiveness of the second pass on the hay than for the one pass at third level. Figure 24c shows the time required for different levels of feed rate and the number of passes to cause hay to reach a 20 percent moisture content. This moisture content was considered as a safe storage moisture content without the need for preservative types of additives.

The basic aim of conditioning is to reduce the drying time required to approach the level of moisture such that hay could be taken from the field for storage and with lowest losses. In Figure 24c, the graph for the steel tie-cord rolls indicates that samples treated at both the first and second levels of feed rate and with only one pass approached a safe storage level after 4 hours and 45 minutes of drying while third levels of feed rate had required 6 hours drying time. The graph for two passes indicated that samples for both the first and second level of feed rates dried slower than when only one pass was used. The third level of feed rate required more drying time than any other combination at only one pass. However, the third level of feed rate required less drying time for two passes than for one pass.

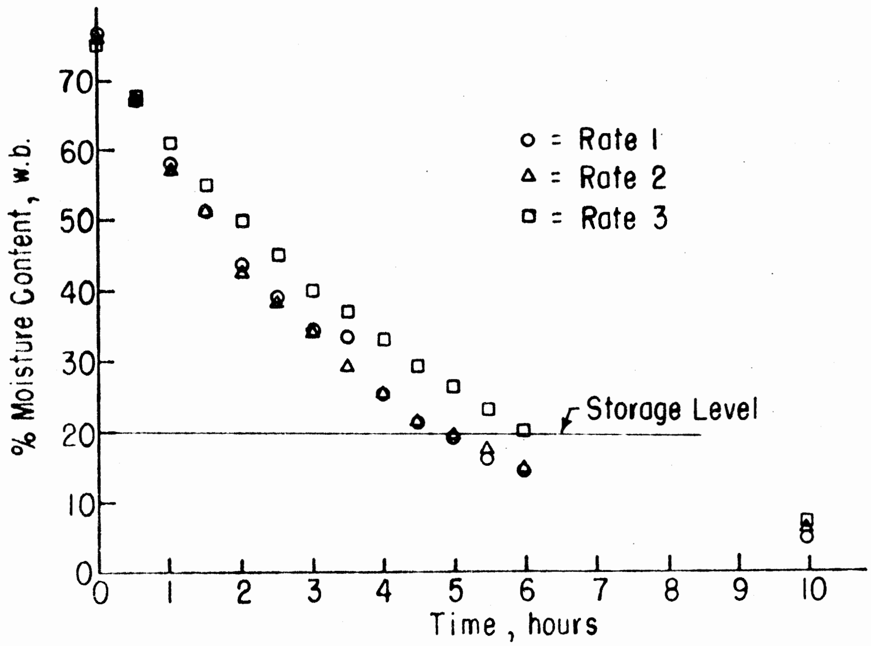

Figure 24a. Drying Curve of Alfalfa at Different Levels of Feed Rate for Steel Tie-cord Rolls for One Pass

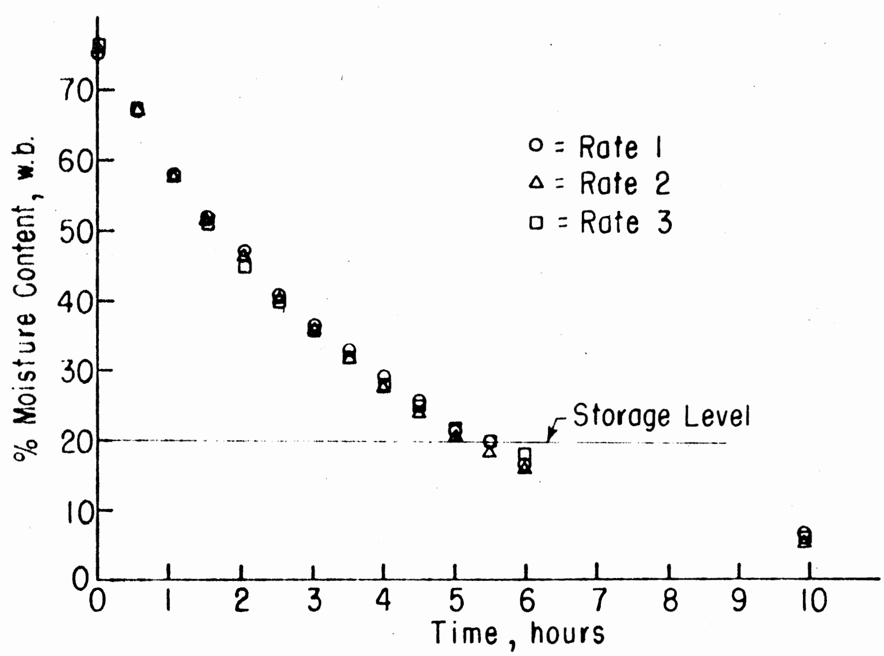

Figure 24b. Drying Curve of Alfalfa at Different Levels of Feed Rate for Steel Tie-cord Rolls for Two Passes

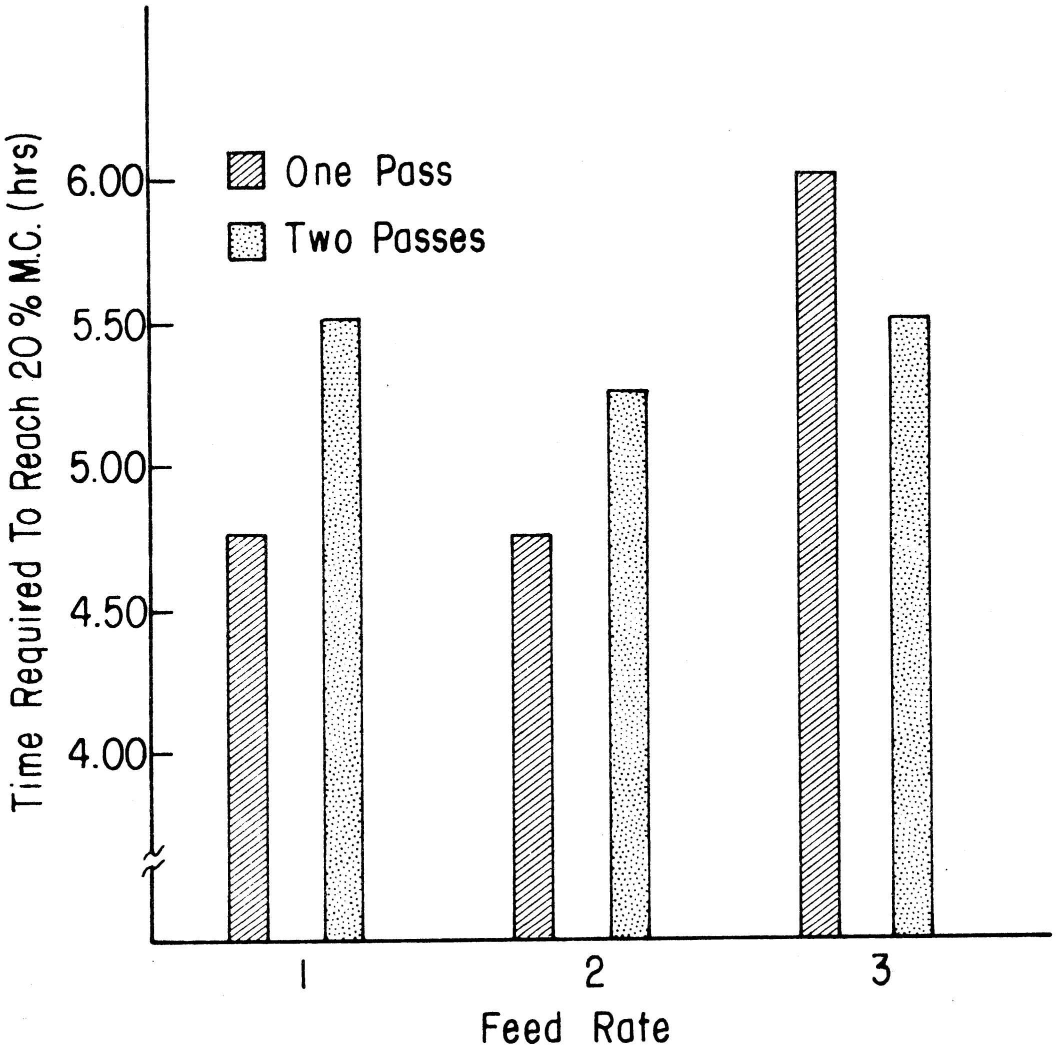

Figure 25c. Distribution of Time Required to Approach 20% M.C. Vs. Different Levels of Passes and Feed Rates for Steel Tie-cord Rolls

Rubber Intermeshing Rolls

The rubber intermeshing rolls drying curves are shown in Figures 25a and 25b. Figure 25a shows the drying rate for one pass of the hay at the three feed rate levels. The results show that there is essentially no difference among drying curves for the first, second and third levels of feed rate. Figure 25b shows the drying rates for two passes of hay at the three levels of feed rate. The curves for the 2 passes indicate that the third feed rate level dried faster than the first and second levels. However, after 5 hours of drying, the first and third levels of feed rate had reached the same moisture content. The second level of feed rate required 10 hours of drying time to achieve a moisture content equal to that for the other two levels of feed rate. Figure 25c shows time required for hay from the different combination of feed rate and number of passes for the rubber intermeshing rolls to achieve a 20 percent moisture level. The maximum variation was about 42 minutes. The time required to reach a 20 percent moisture content for one pass and two passes treatments was 5 hours and 41 minutes and 5 hours and 26 minutes, respectively, when averaged over the 3 feed rates.

Smooth Rubber Rolls

The drying curves for the smooth rubber rolls for one pass treatments at three levels of feed rate are shown in Figure 26a. The drying curves of feed rate level one and two are quite similar. While the third feed rate treatment dried at slower rates than the others. For two passes of the smooth rubber rolls (Figure 26b), the drying curves

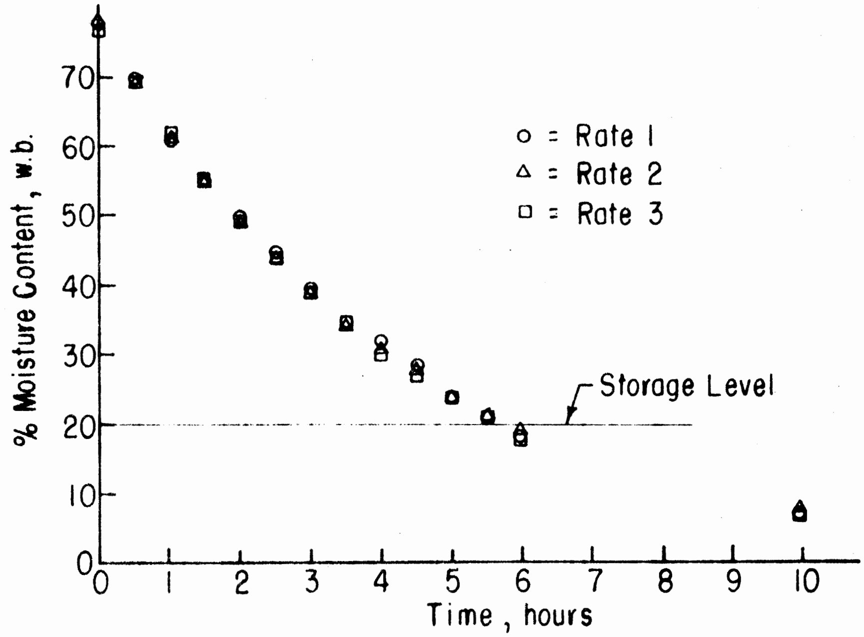

Figure 25a. Drying Curve of Alfalfa at Different Levels of Feed Rate for Rubber Intermeshing Rolls with One Pass

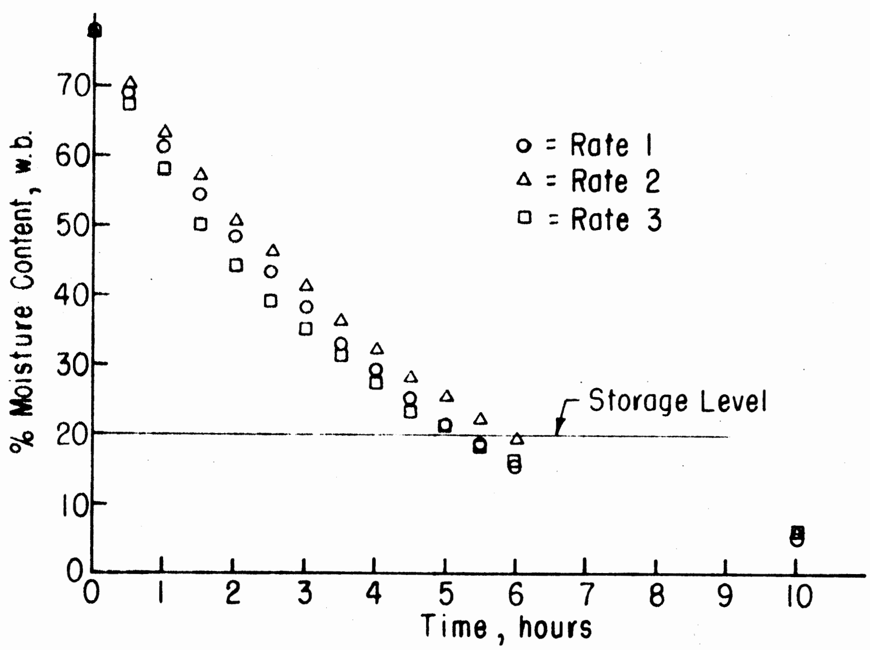

Figure 25b. Drying Curve of Alfalfa at Different Levels of Feed Rate for Rubber Intermeshing Rolls with Two Passes

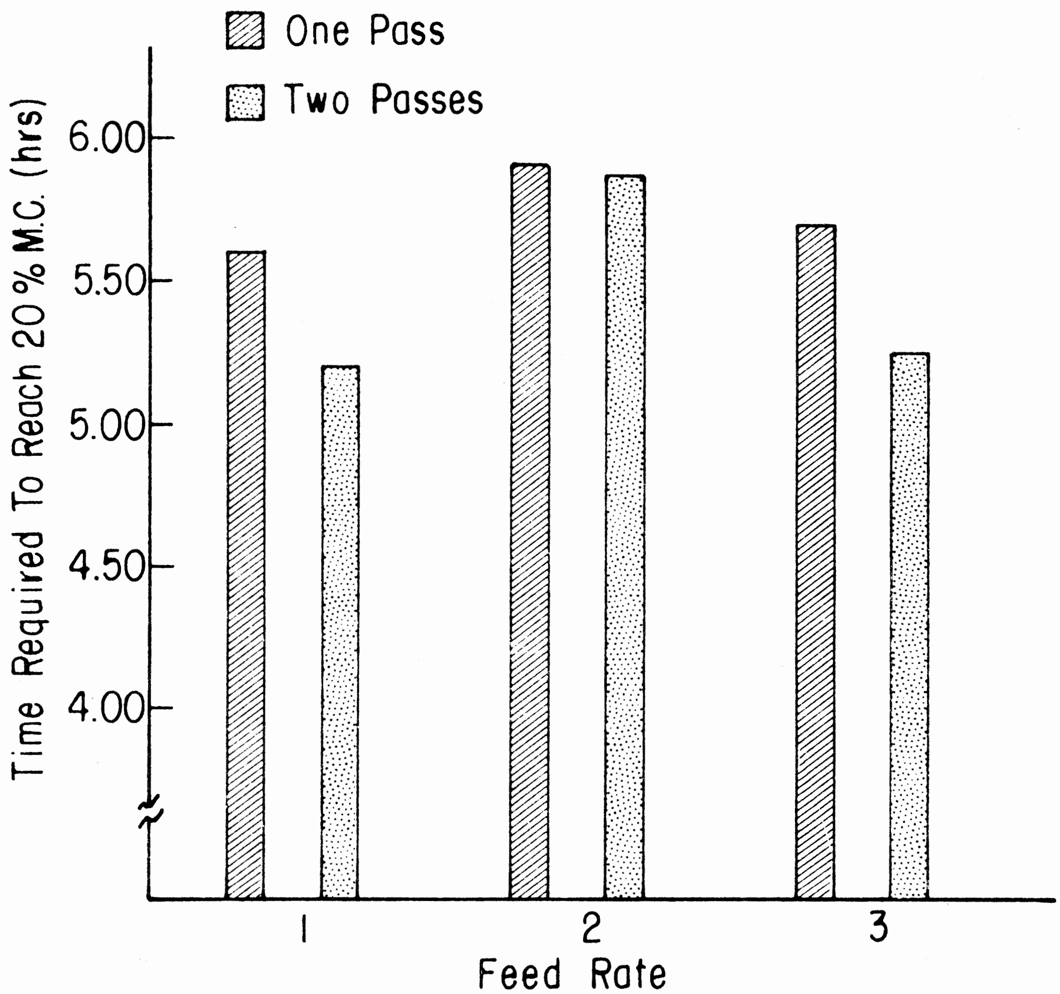

Figure 25c. Distribution of Time Required to Approach 20% M.C. Vs. Different Levels of Passes and Feed Rates for Rubber Intermeshing Rolls

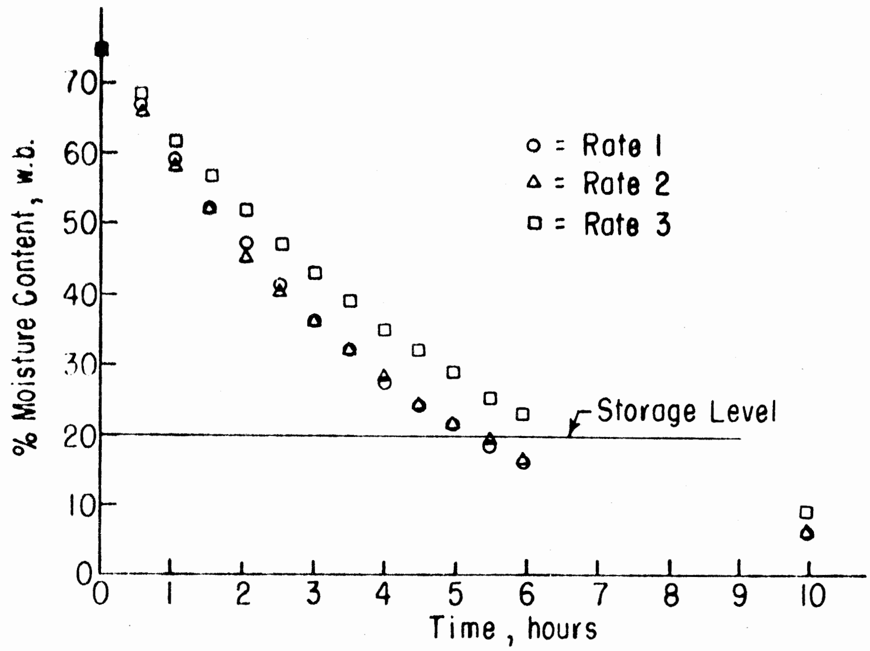

Figure 26a. Drying Curve of Alfalfa at Different Levels of Feed Rate for Smooth Rubber Rolls with One Pass

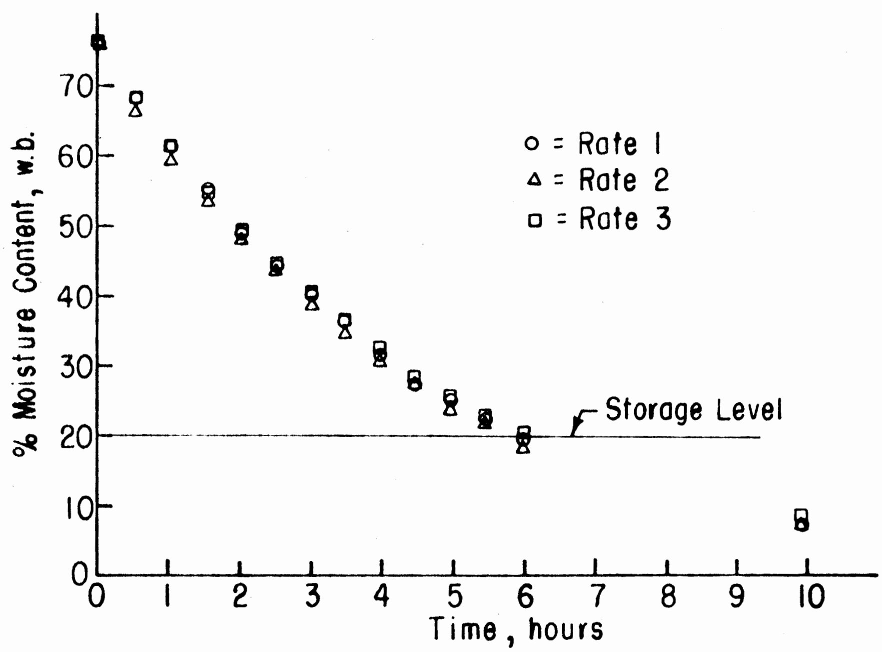

Figure 26b. Drying Curve of Alfalfa at Different Levels of Feed Rate for Smooth Rubber Rolls with Two Passes

indicate that the difference in drying rate among the different levels of feed rate has been reduced. All three feed rate levels have shown nearly the same drying rate. The time required for conditioned hay to reach the 20 percent moisture content level with one pass for feed rates 1, 2, and 3 is 5 hours and 8 minutes, 5 hours and 15 minutes, and 6 hours and 44 minutes, respectively. For two passes at the three feed rates, the time is 5 hours and 48 minutes, 6 hours and 22 minutes, and 6 hours, respectively. The average drying time for one pass was 5 hours and 42 minutes while for two passes, it was 6 hours and 3 minutes (Figure 26c).

Steel Crimper Rolls

The drying curves for the steel crimper rolls are shown in Figure 27a and 27b. The drying curve of different levels of feed rate for one pass is compared in Figure 27a and indicates that all three treatments have dried nearly at the same rate. Figure 27b shows a little higher drying rate for third level of feed rate than two other levels when 2 passes were used.

The required time to dry the hay samples to the 20 percent moisture content level for the different treatment combination is shown by Figure 27c. The required time to reach the desired moisture level for the third level of feed rate used with two passes was 4 hours and 30 minutes and for all other treatment combinations, the time varied only between 4 hours and 58 minutes and 5 hours and 24 minutes. The average required drying time to achieve the 20 percent moisture level for one and two passes was 5 hours and 40 minutes and 5 hours, respectively.

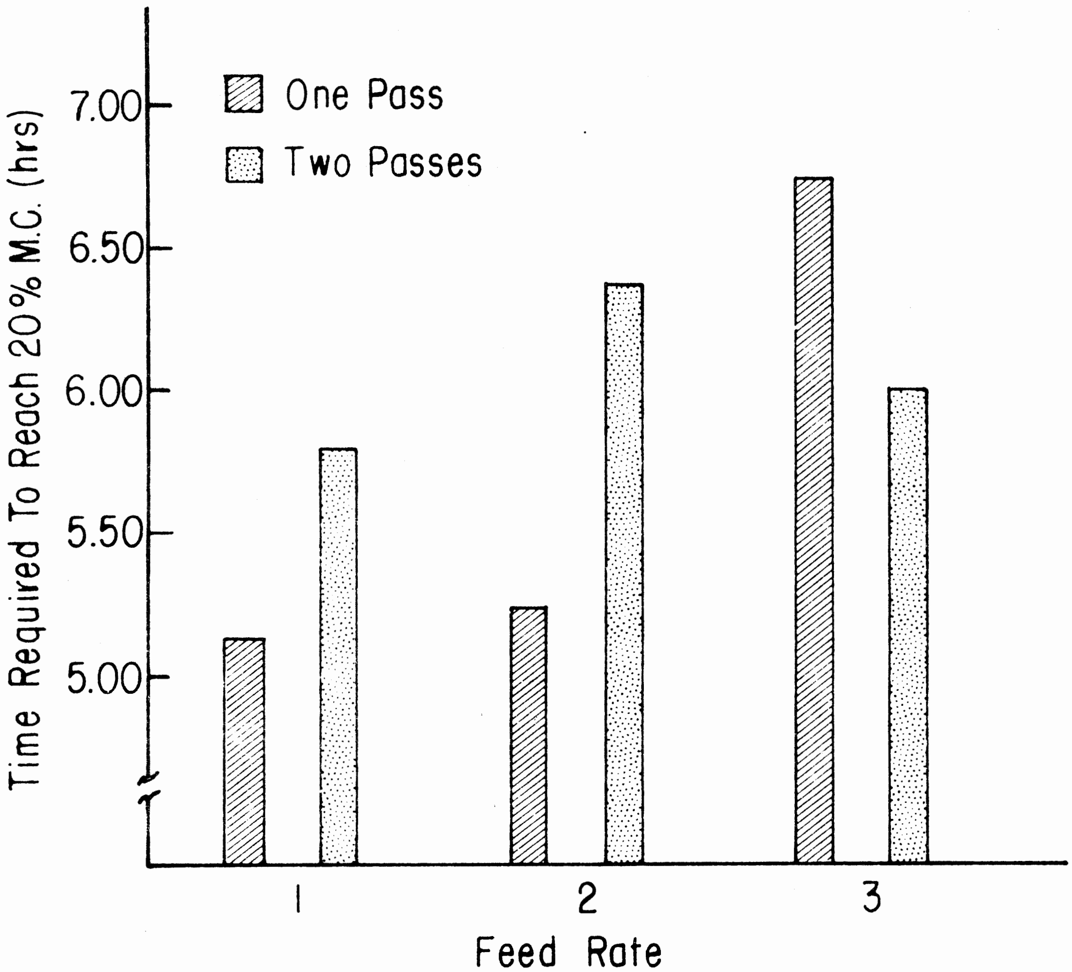

Figure 26c. Distribution of Time Required to Approach 20% M.C. Vs. Different Level of Passes and Feed Rate for Smooth Rubber Rolls

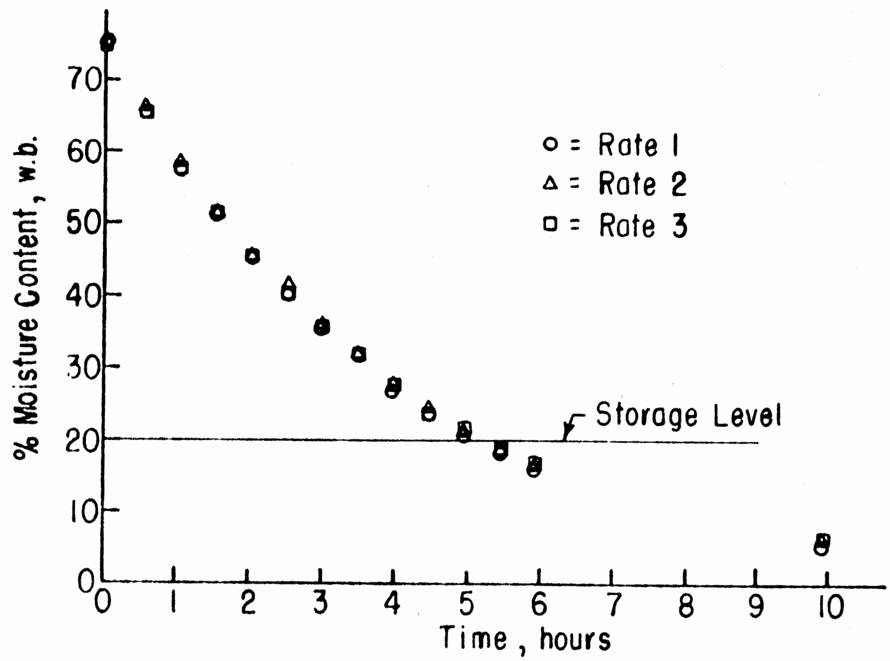

Figure 27a. Drying Curve of Alfalfa at Different Levels of Feed Rate for Steel Crimper Rolls with One Pass

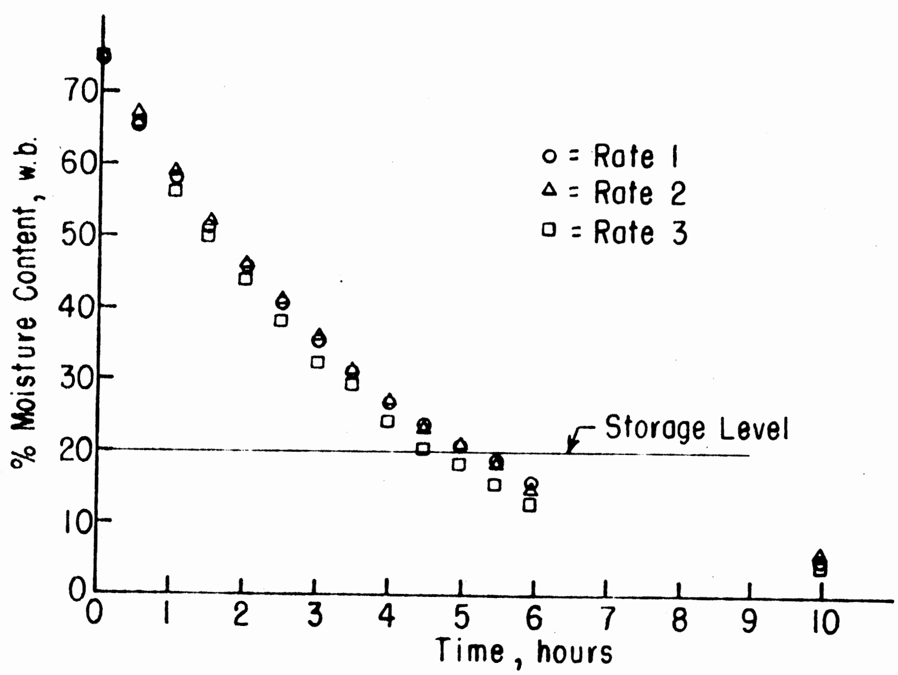

Figure 27b. Drying Curve of Alfalfa at Different Levels of Feed Rate for Steel Crimper Rolls with Two Passes

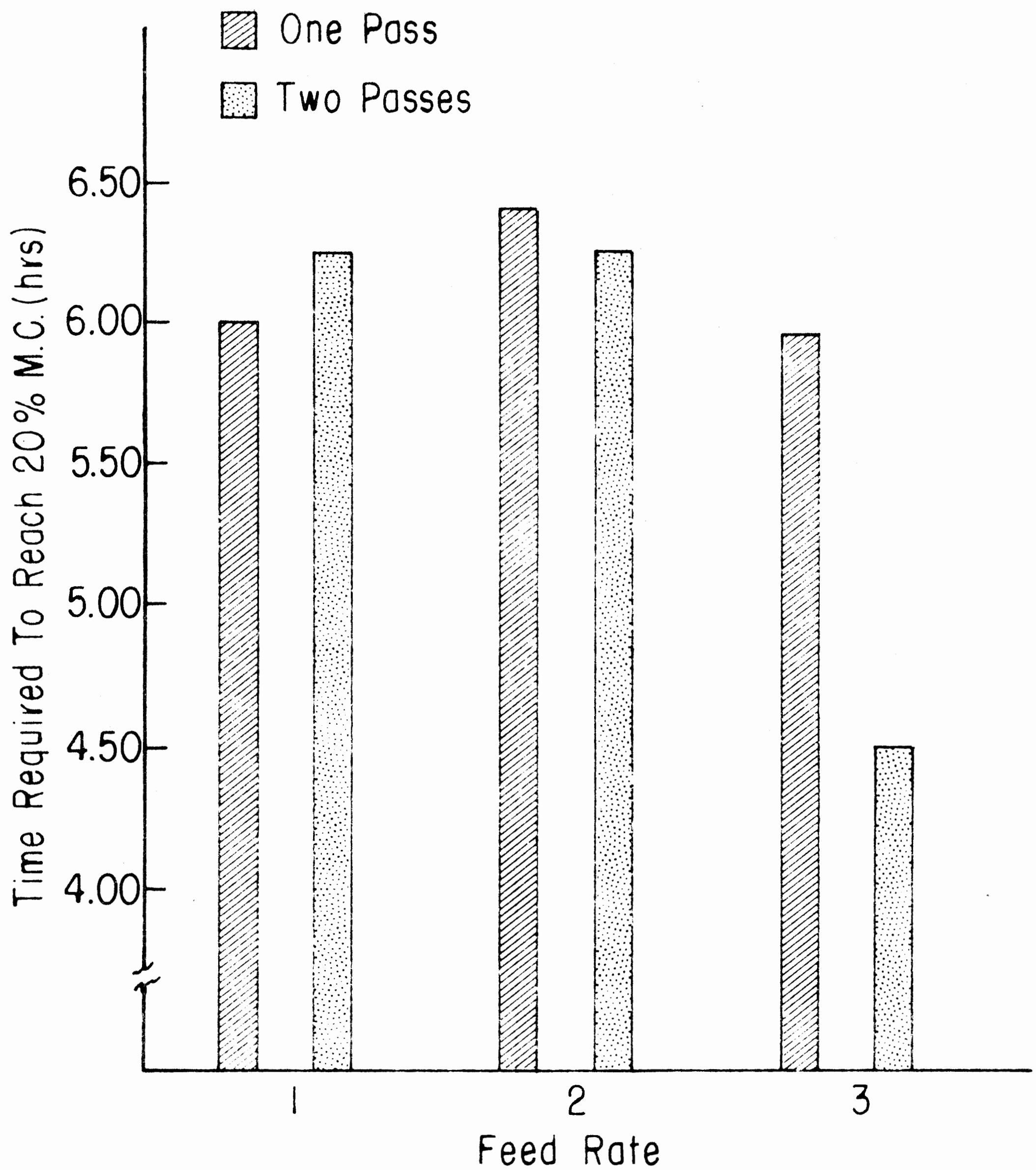

Figure 27c. Distribution of Time Required to Approach 20% M.C. Vs. Different Levels of Passes and Feed Rate for Steel Crimper Rolls

Plastic Cord Rolls

The drying curves obtained for plastic cord rolls are shown in Figure 28a and 28b. This roll was designed to study the bruising effect on the alfalfa stem. It was expected that the plastic cord when used at a fast speed would tend to remove the wax off the stem and aid in increasing the drying potential. It was thought that the use of many cords would damage the stem of the alfalfa more severely than would the other type of rolls. The drying curve for the different levels of feed rate and with one pass is presented in Figure 28a. The results indicate that hay from the third level of feed rate dried faster than from the first and second feed rate levels. The drying rate for the second and third feed rate were nearly the same, however, the second feed rate had a tendency to dry faster than did the first feed rate. The curves for the two pass treatment combinations are shown in Figure 28b. The drying rate of second level of feed rate dried at the same rate as third feed rate level. The drying rate for the first level of feed rate was the slowest.

The time required for the hay samples treated with the various treatment combinations of the plastic cord to reach the safe level of moisture content (20% wb) averaged about 6 hours and 50 minutes for the feed rate levels of one and two when used with one pass and for two passes was about 6 hours and 18 minutes. The third feed rate level used with one pass required about 5 hours and 18 minutes and the two passes required about 5 hours and 15 minutes. This indicates that the second pass did not improve the drying rate for the third feed rate. When averaging over the feed rate levels, the average required time in

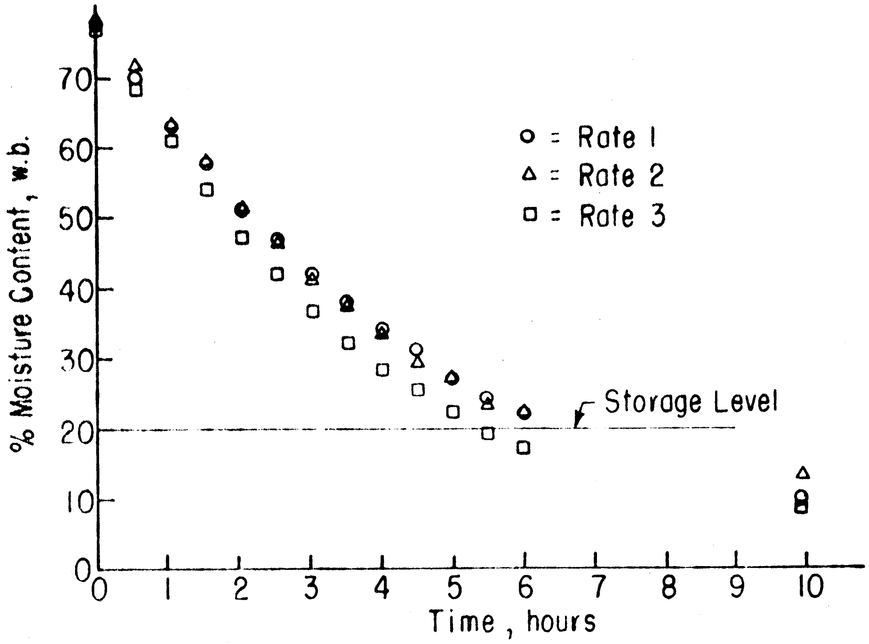

Figure 28a. Drying Curve of Alfalfa at Different Levels of Feed Rate for Plastic Cord Rolls with One Pass

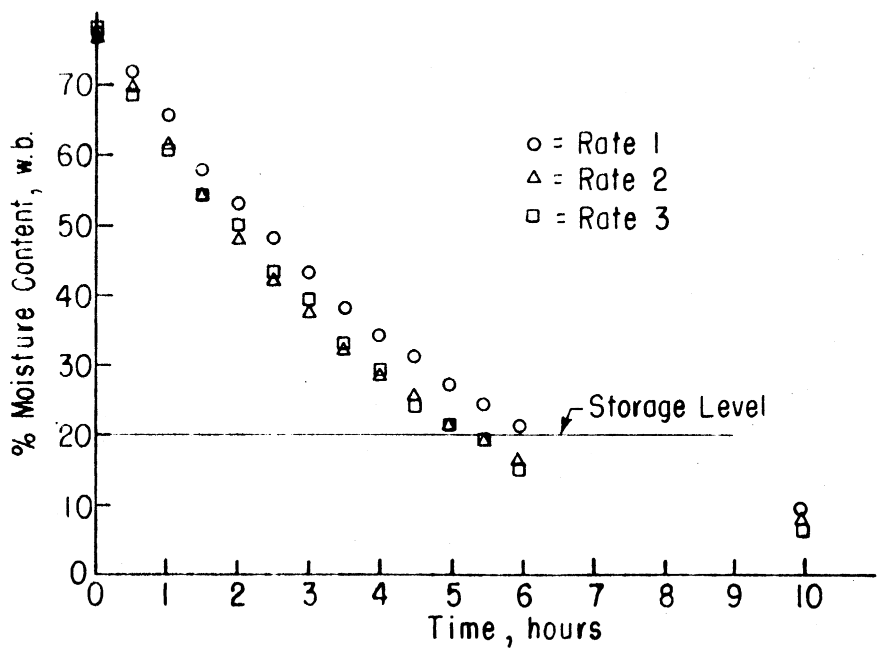

Figure 28b. Drying Curve of Alfalfa at Different Levels of Feed Rate for Plastic Cord Rolls for Two Passes

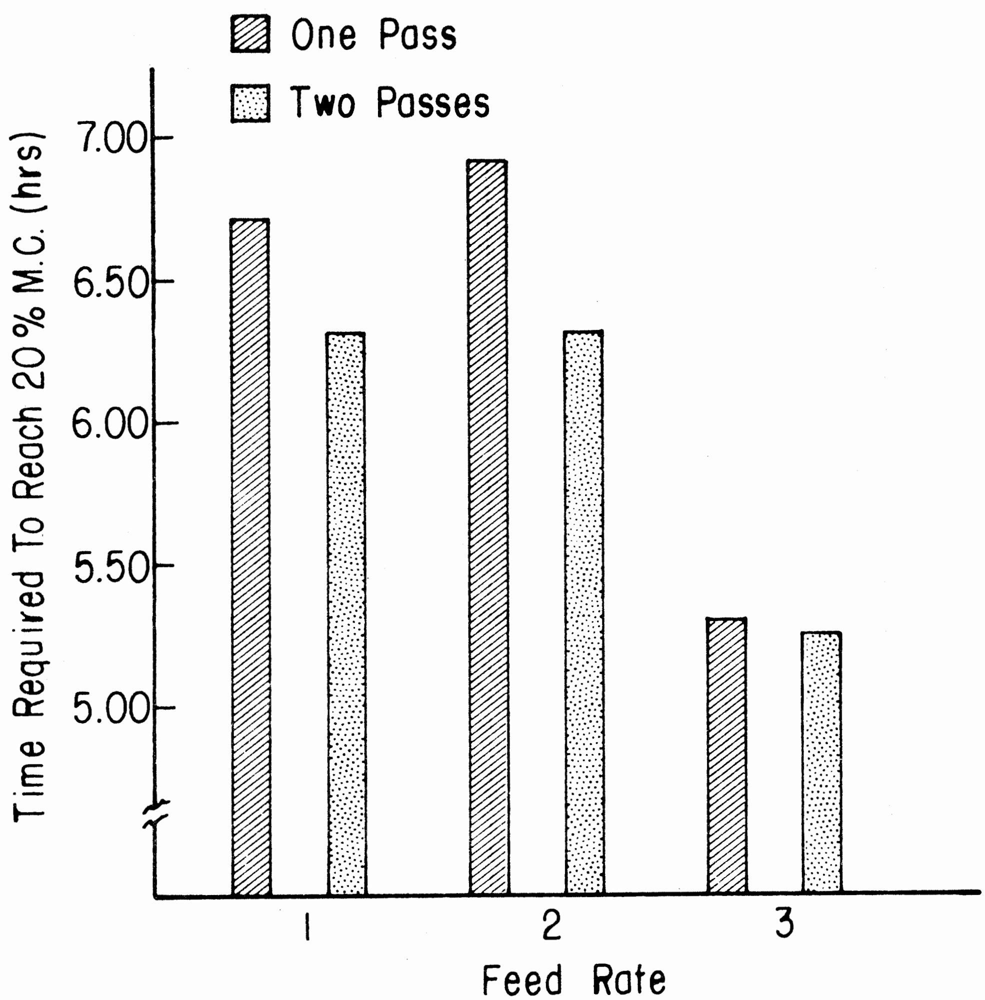

Figure 28c. Distribution of Time Required to Approach 20% M.C. Vs. Different Levels of Pass and Feed Rates for Plastic Cord Rolls

one pass was about 6 hours and 18 minutes and for two passes was 5 hours and 57 minutes.

The data presented in the discussion was averaged over five replications for 30 factorial treatments. These combinations were the result of five rolls, two levels of passes and three levels of feed rates. The average time for hay samples from different levels of feed rates and at one or two passes to dry to the 20 percent moisture content level is given in Table IV for the different type of rolls. The numbers in the parentheses indicate the rank of each roll within the group.

The treatment combinations that resulted in the shortest drying time to achieve the 20 percent moisture level was the steel crimper roll at third feed rate level and with two passes. The second fastest drying would be for the steel tie-cord at first and second feed rates with one pass. The plastic cord roll was the lowest effective roll when used at the second and first level of feed rate and with one pass. It has quite improved results with an increase in the number of passes and feed rates. It may be that it would be suitable for higher cutter bar/roll width ratio designs. The other roll-feed rate-pass combinations appear to be about average in effectiveness.

Statistical Analysis Results

The change in weight of the hay samples due to the drying effect was recorded as mv/cm on the Beckman Dynograph output. The chart data was recorded (each millimeter deflection equal to 5 grams weight change) as the weight of the sample in grams at specified times (0.0, 0.5, ... 10 hours) and punched on computer cards for statistical

TABLE IV

AVERAGE REQUIRED TIME OVER DIFFERENT LEVELS OF FEED RATES FOR EACH ROLL WITH ONE OR TWO PASSES TO REACH 20 PERCENT MOISTURE CONTENT

Type of Roll	One Pass Hours	Two Passes Hours
Steel Tie-cord	5.17 (1)	5.42 (2)
Rubber Intermeshing	5.74 (4)	5.58 (3)
Smooth Rubber	5.70 (3)	6.05 (5)
Steel Crimper	5.45 (2)	5.34 (1)
Plastic Cord	6.30 (5)	5.95 (4)

analysis.

The analysis of variance was obtained by using the Statistical Analysis System (SAS) with procedures on three different bases (using equation 1, 2, and 3).

$$F = ((Wt - D) \times 100)/(Wi - Drymat), \qquad (1)$$

$$Mw = ((Wt - D) \times 100)/Wi, \qquad (2)$$

$$Md = ((Wt - D) \times 100)/D, \qquad (3)$$

where:

F is the percent fraction of water remaining at drying sample at time "t" or $\frac{\text{weight of water at time "t"}}{\text{initial weight of water}} \times 100$.

Wt is the weight of the drying hay at time "t".

D is the weight of sample after complete drying (dry weight).

Wi is the original weight of the sample before drying (wet weight).

Mw is the percent moisture content wet base.

Md is the percent moisture content on dry base.

The result of all basis analysis indicates that time was highly significant with an $\alpha = .001$.

The observed significant level for roll effect using equation 1 and 2 were 0.0512 and 0.771, respectively, which indicates that rolls were effective at drying (with 90 percent confidence level). Feed rate and the number of passes effects were statistically not significant. For more information, the reader is referred to Appendix A. The least significant difference method was used to identify which mean effect of the rolls were statistically significantly different. The only significant difference in drying rate (at $\alpha = .05$) was noticed between the steel crimper and plastic cord with steel crimper having a higher drying effect.

The data was plotted on different bases to observe the relationship of the data. The results of plotting (Data in Appendix B) indicates that the relationship between drying time and either Log_{10} Mw, Log_{10} Md or Log_{10} F results in a straight line plot. Data for each replication were plotted as a separate curve. From these plots, it was apparent that there was high variation between replication for the treatment combination that was plotted. This same result was clearly shown by Straub (1975). For the control treatments after six hours of drying, he reported percent moisture (wb) varied from about 25 percent up to 50 percent.

The general linear models (SAS) procedure was used to develop the equation to predict the required time to reach a specified percent moisture content for the wet and dry bases as well as for percent evaporation. The model for Mw as dependent variable indicated that the model fits the data with $R^2 = 0.86$ and C.V. = 19.7179. It also indicates that both linear and quadratics are highly significant. The prediction equation for data of season 2, roll 0, pass 1, rate 1 results in equation 4.

$$Mw = 76.36 - 14\,t + .718\,t^2 \qquad (4)$$

Using Md as dependent variable, it shows a very low correlation coefficient and a high coefficient of variation. Using F as a dependent variable, it shows a higher correlation coefficient $R^2 = .909$ and lower coefficient of variation.

When using $\log_{10}$ F as a dependent variable, it fits the model with correlation coefficient and a coefficient of variance to 0.88 and 6.43, respectively, and indicates that there is no significant curvature. The prediction equation is as follows:

$$\log_{10} F = 2.007 - 0.103\ t - 0.0005\ t^2 \tag{5}$$

Because of a very small coefficient for the quadratic portion, it reduces to equation 6:

$$\log_{10} F = 2. - .103\ t \tag{6}$$

The predicted equation estimates with a very large confidence interval because of a significant difference existing among replications as mentioned previously. For detailed information, the reader is referred to Appendix C.

CHAPTER VI

SUMMARY OF RESULTS

Hay is the most important forage crop in the United States. Since field curing may subject hay to weather damage and as a result causes considerable loss of nutrients, it is important to find the best possible and most economical method of curing the hay.

Thirty treatment combinations involving 5 conditioning rolls, 3 feed rates of alfalfa, and one or two passes of the hay through the rolls were evaluated as to the effect of these treatments on the forage drying rate. This experiment showed that the fastest evaporation was obtained when the plants were hard crushed, crimped and bruised. This is possible with increasing the number of passes; but, it varies by feed rate and the type of roll. The drying rate was improved by increasing the feed rate for the plastic cord roll and the steel-crimper rolls. The SAS prediction equation resulted in a wide confidence interval due to the variation between replications. Assuming that the drying curves are parallel, removing the replications effects the results in a more acceptable prediction confidence interval.

Conclusions

The conclusions that can be drawn from this research of the mechanically treating alfalfa to increase the drying rate can be stated in the following points:

1. The difference in drying rate of conditioning rolls was not statistically significant. The only significant difference at $\alpha = .05$ level was observed for the use of the steel crimper and the plastic cord rolls; the steel crimper rolls were more effective in increasing the drying rate.
2. The one pass and two passes treatments do not show statistically significant differences when averaged over all rolls and the three levels of feed rate.
3. The different levels of feed rate are not statistically significantly different when averaged over all passes and rolls. However, the plotted curves show that an increase in feed rate may increase or not increase the drying rate, depending on the type of rolls used.
4. The plastic cord roll was the least effective type in increasing the drying rate but it shows more effectiveness when the feed rate was increased.
5. The "best fit" model was achieved by considering the log of the ratio of the percent moisture remaining over initial moisture content as a dependent variable and time as an independent variable.

Recommendations for Future Research

1. Perform extensive tests to learn what is the basic factor which causes the high variation in replication.
2. Determine the performance of each roll, independent from the others, in conditions very close to field operation. Then, compare the best achieved condition of each roll to evaluate

the drying effects.

3. The losses associated with the mechanical treatments are needed to provide more information concerning rolls, passes, and rate of feed.
4. A combination of mechanical treatments and preservatives may be very effective in reducing the required drying time and to improving the quality of hay.

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APPENDICES

APPENDIX A

ANALYSIS OF VARIANCE

TABLE V

ANALYSIS OF VARIANCE FOR VARIABLE
Mw (PERCENT MOISTURE
CONTENT (wb))

	Degree of Freedom	Sum of Squares	Mean Square	F Value	Probability > F
Among Rolls	4	3211.82	802.93	2.47	0.0771
Within Rolls	20	6498.67	324.93		
Between Pass	1	538.13	538.13	2.08	0.1582
Within Pass	25	6458.73	258.35		
Among Rate	2	117.45	58.72	0.20	0.8186
Within Rate	100	28938.00	289.38		
Among Time	13	1157981.11	89075.74	10000.00	0.0001
Within Time	1950	19367.12	7.37		

TABLE VI

ANALYSIS OF VARIANCE FOR VARIABLE F (PERCENT FRACTION WATER REMAIN)

	Degree of Freedom	Sum of Squares	Mean Square	F Value	Probability > F
Among Rolls	4	2790.63	697.66	2.83	0.0512
Within Rolls	20	4922.82	246.14		
Between Pass	1	891.41	891.41	2.06	0.1604
Within Pass	25	70818.49	432.74		
Among Rate	2	157.82	78.91	0.17	0.8430
Within Rate	100	45794.51	457.95		
Among Time	13	1973111.68	151777.82	10000.00	0.0001
Within Time	1950	26197.73	13.44		

TABLE VII

ANALYSIS OF VARIANCE FOR VARIABLE
Md (PERCENT MOISTURE
CONTENT (Db))

	Degree of Freedom	Sum of Squares	Mean Square	F Value	Probability > F
Among Rolls	4	289046.6	72261.64	1.32	0.2952
Within Rolls	20	1092280.5	54614.03		
Between Pass	1	13607.4	13607.37	2.42	0.1293
Within Pass	25	140887.3	5635.49		
Among Rate	2	6221.8	3110.89	0.39	0.6811
Within Rate	100	789797.8	7897.78		
Among Time	13	22682090.8	1744776.22	4031.31	0.0001
Within Time	1950	843973.0	432.81		

APPENDIX B

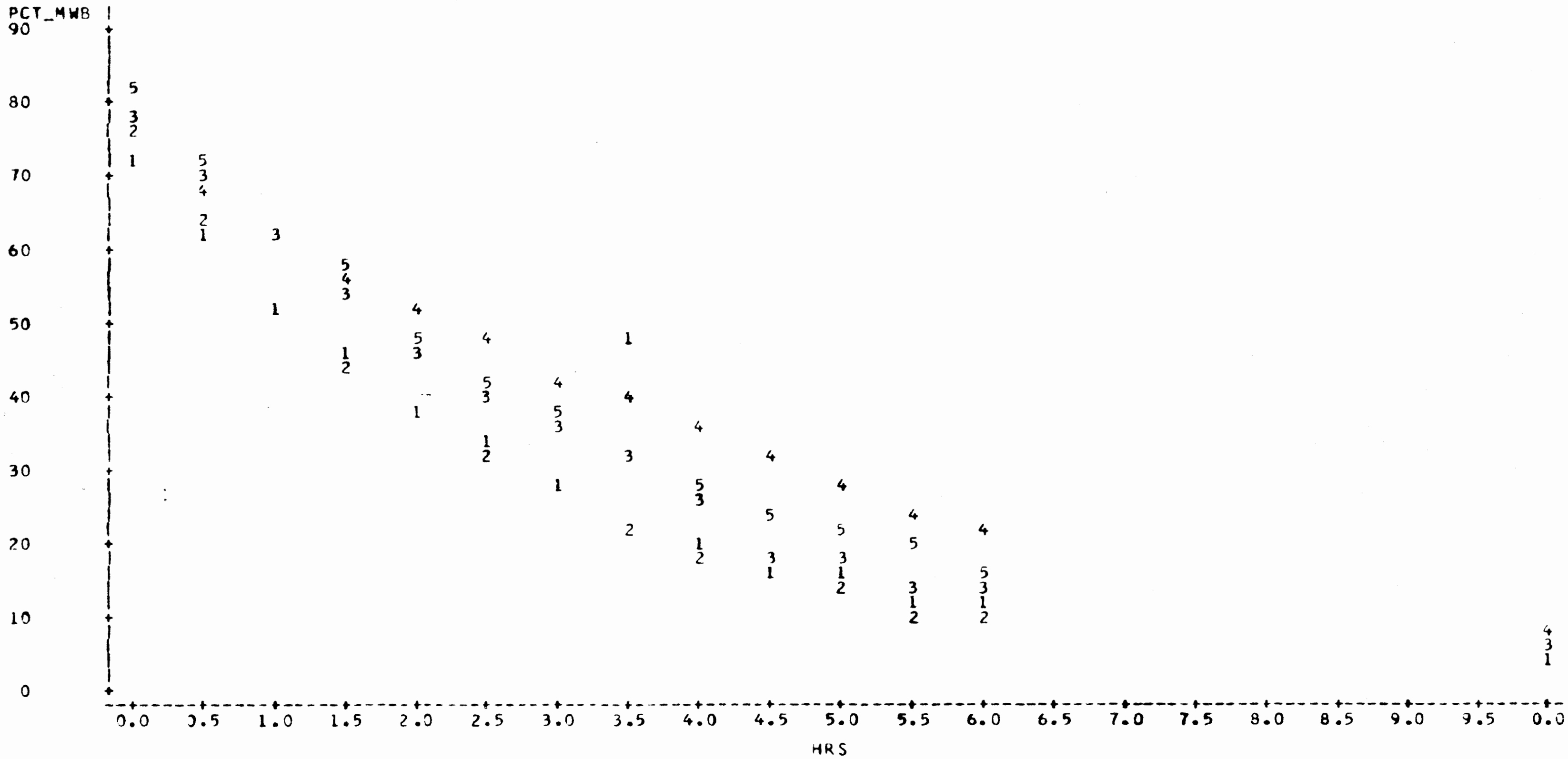
PLOTS OF DRYING TIME VERSUS MOISTURE

FOR SEASON 2, ROLL 0, AND PASS 1

HAY CONDITIONING ROLLS 21:03 THURSDAY, MARCH 23, 1978 1149

SEA=2 ROLL=0 PASS=1 RATE=1*

PLOT OF PCT_MWB*HRS SYMBOL IS VALUE OF REP

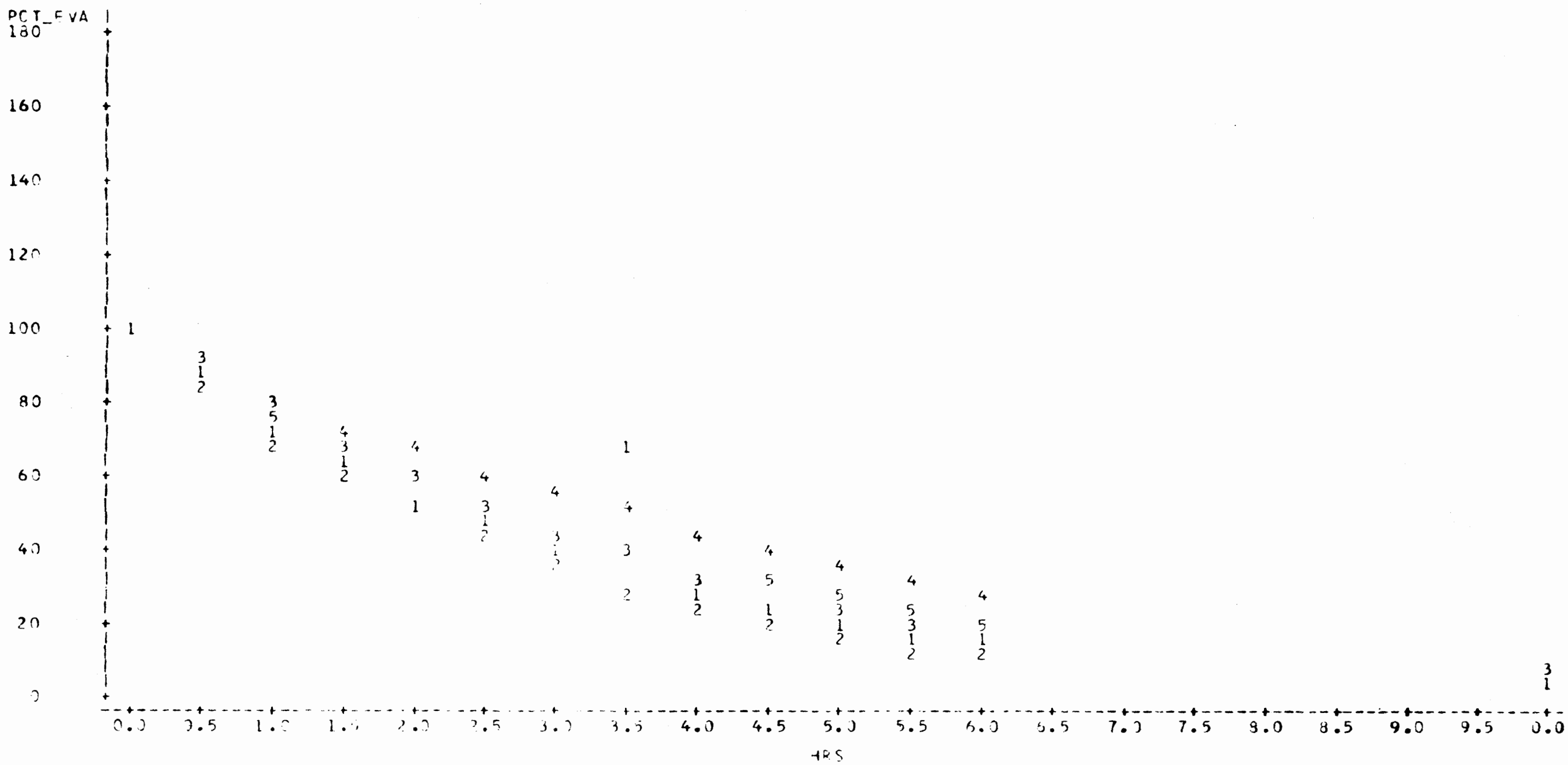


NOTE: 10 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS
SEA=2 ROLL=D PASS=1 RATE=1* 21:03 THURSDAY, MARCH 23, 1978 1141

PLOT OF PCT_EVA*HRS SYMBOL IS VALUE OF REP



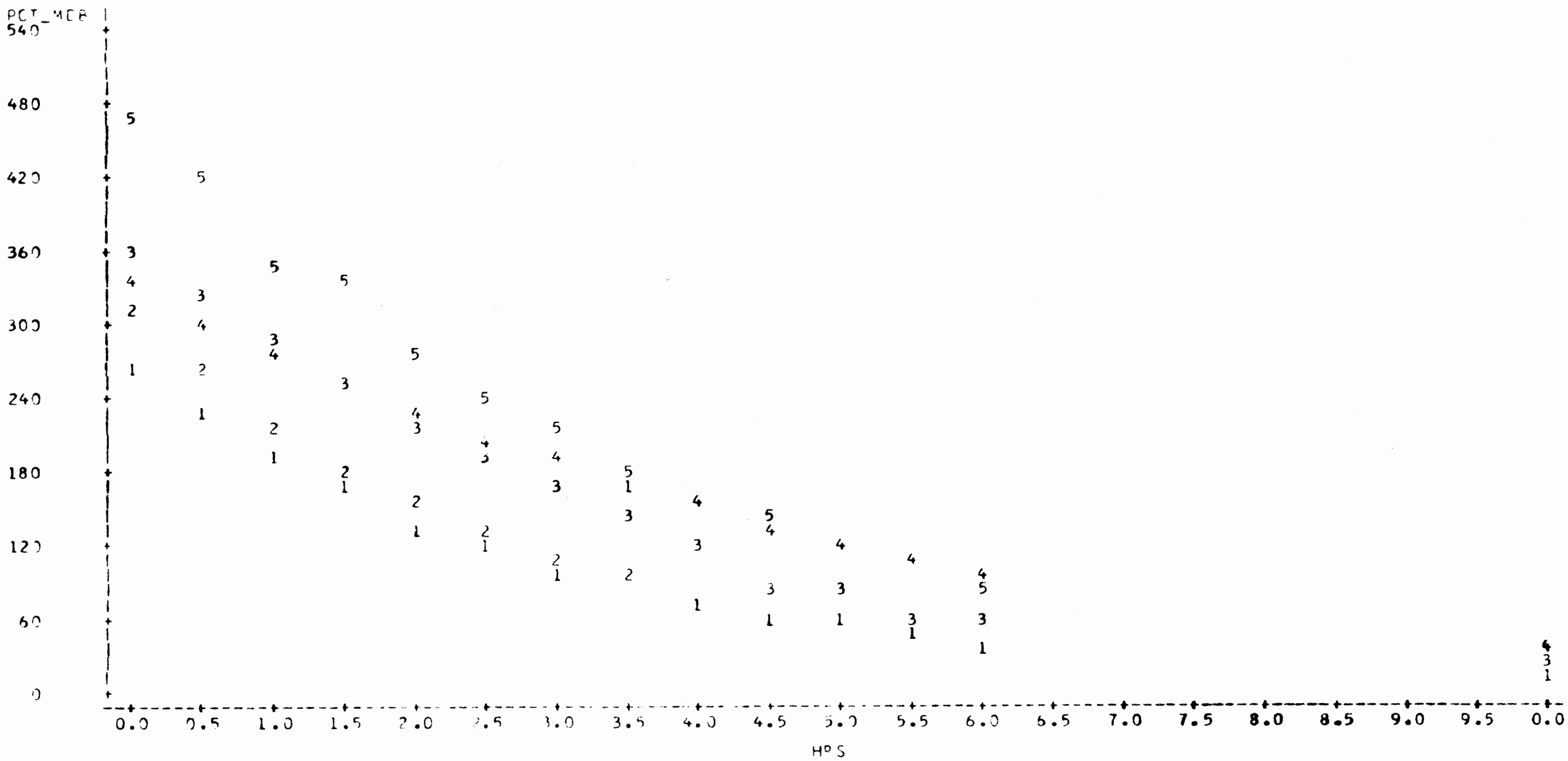
NOTE: 19 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS 21:03 THURSDAY, MARCH 23, 1978 1145

SEA=2 ROLL=3 PASS=1 RATE=1 *

PLOT OF PCT_MOB*HRS SYMBOL IS VALUE OF REP



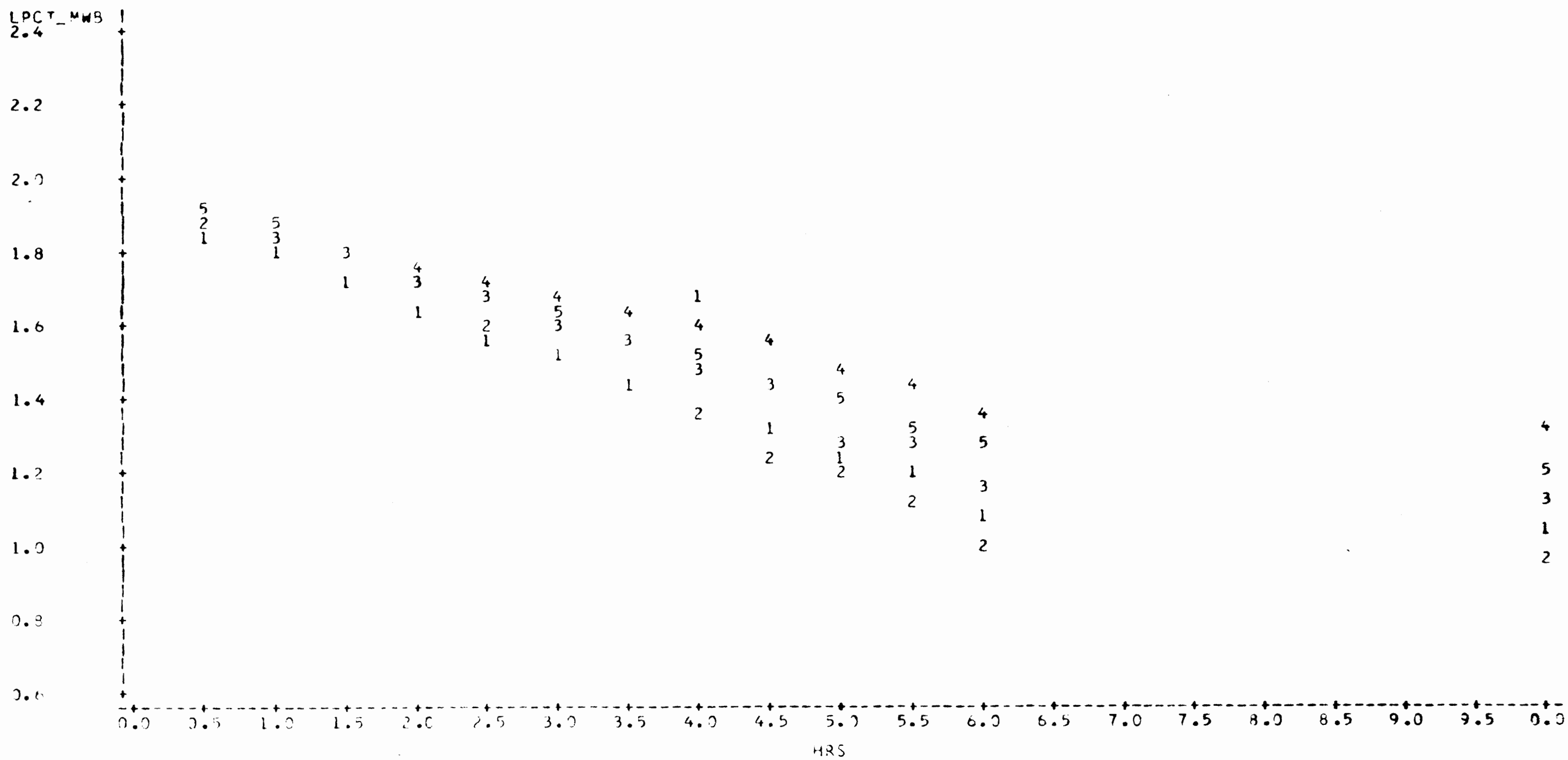
NOTE: 12 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS 21:03 THURSDAY, MARCH 23, 1978 1151

SEA=2 ROLL=0 PASS=1 RATE=1 *

PLOT OF LPCT_MWB*HRS SYMBOL IS VALUE OF REP



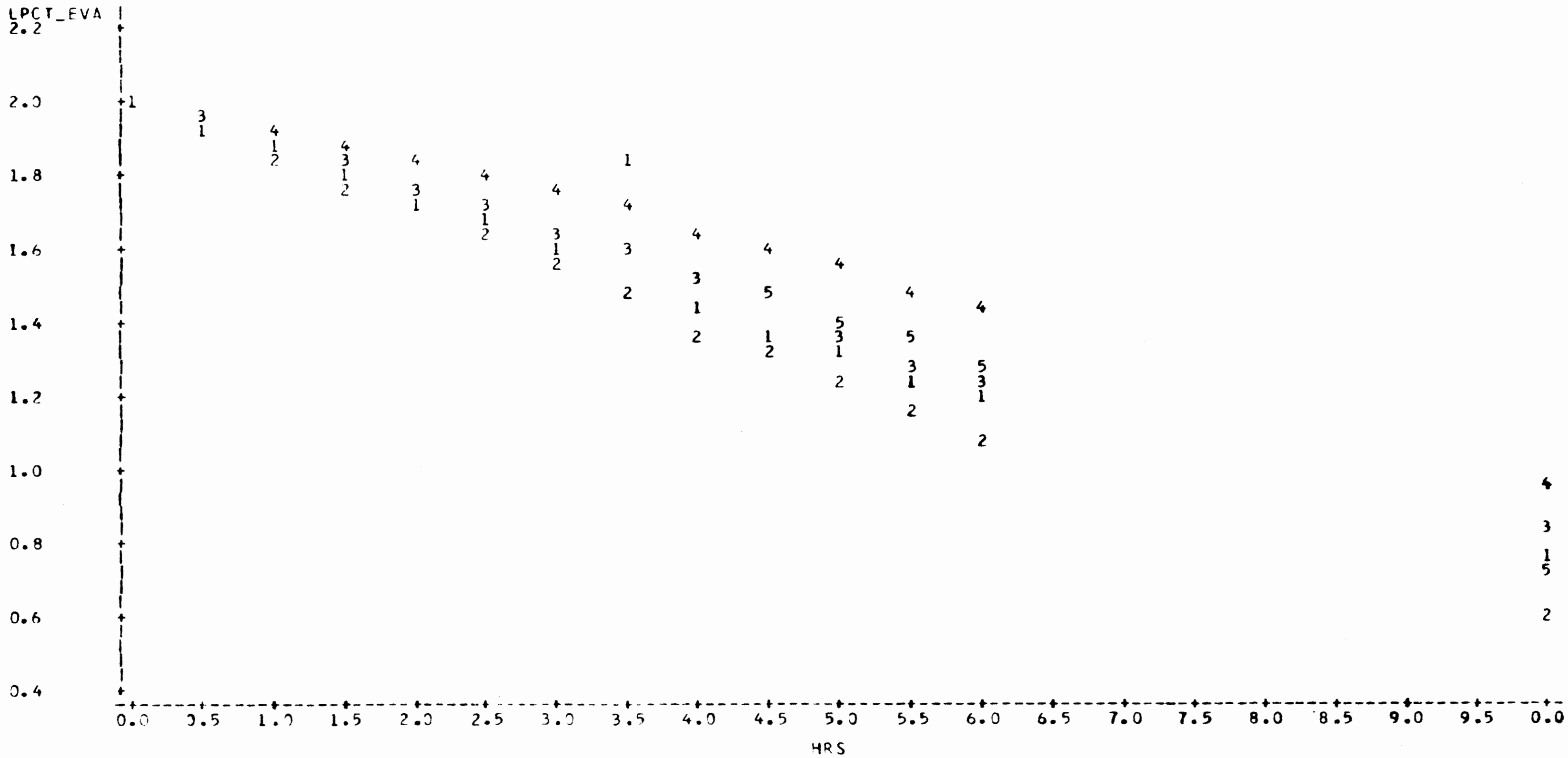
NOTE: 5 OBS HAD MISSING VALUES 14 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS 21:03 THURSDAY, MARCH 23, 1978 1143

SEA=2 ROLL=C PASS=1 RATE=1*

PLOT OF LPCT_EVA*HRS SYMBOL IS VALUE OF REP



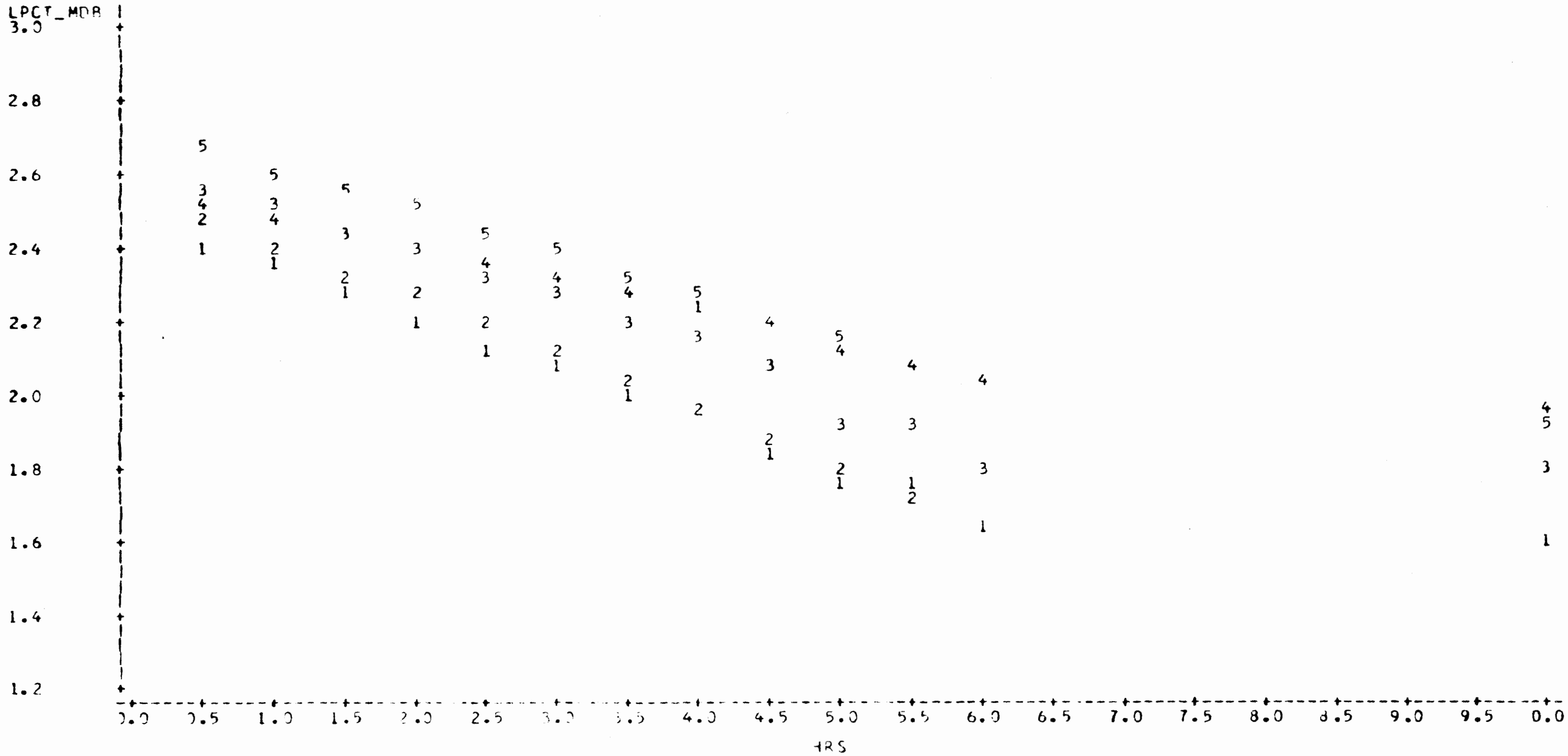
NOTE: 17 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS 21:03 THURSDAY, MARCH 23, 1976 1147

SPA=2 ROLL=? PASS=1 RATE=1 *

PLOT OF LPCT_MDR*HRS SYMBOL IS VALUE OF REP



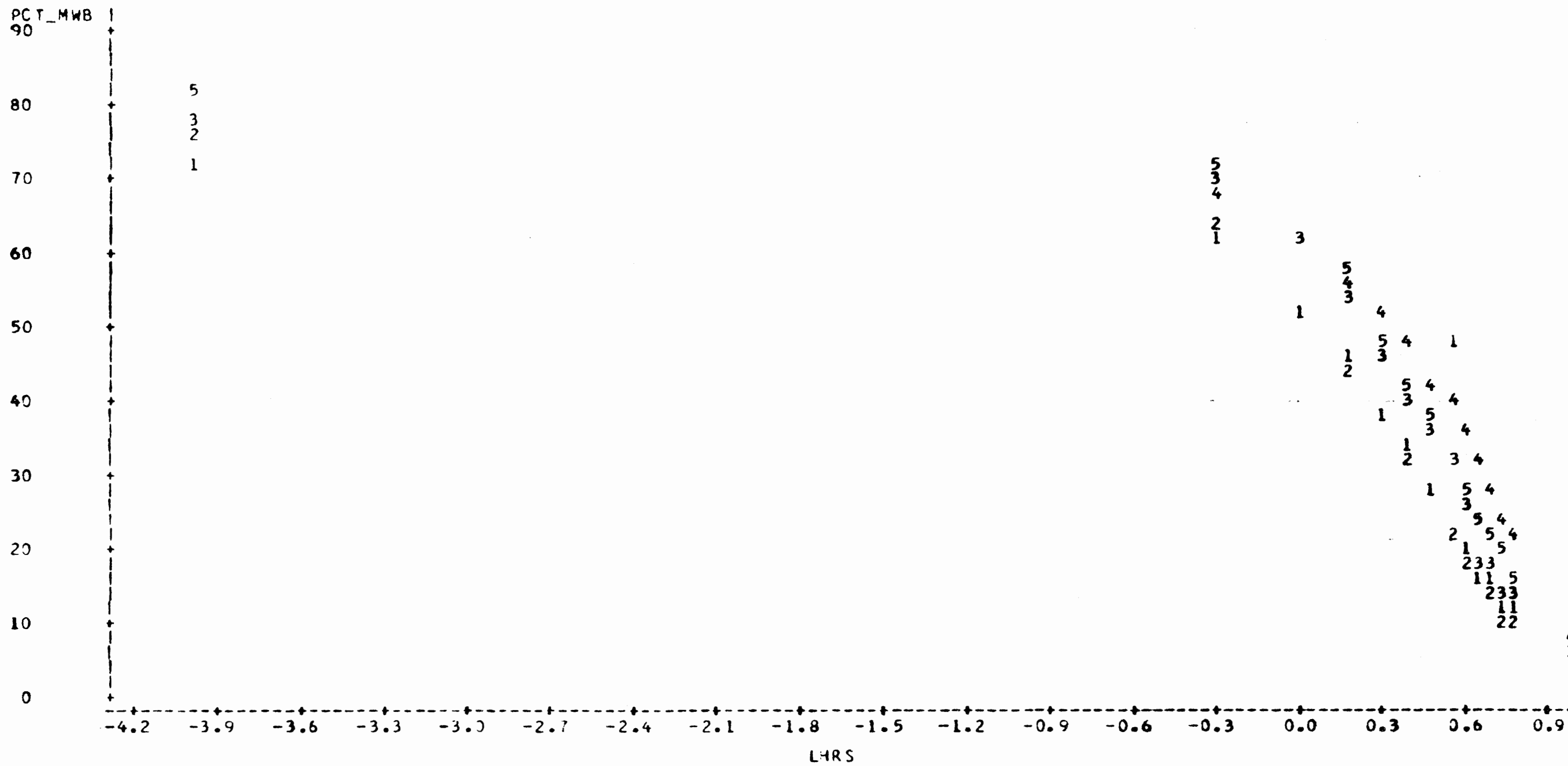
NOTE: 5 OBS HAD MISSING VALUES 8 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS
SEA=2 ROLL=0 PASS=1 RATE=1 *

21:03 THURSDAY, MARCH 23, 1978 1150

PLOT OF PCT_MWB*LHRS SYMBOL IS VALUE OF REP



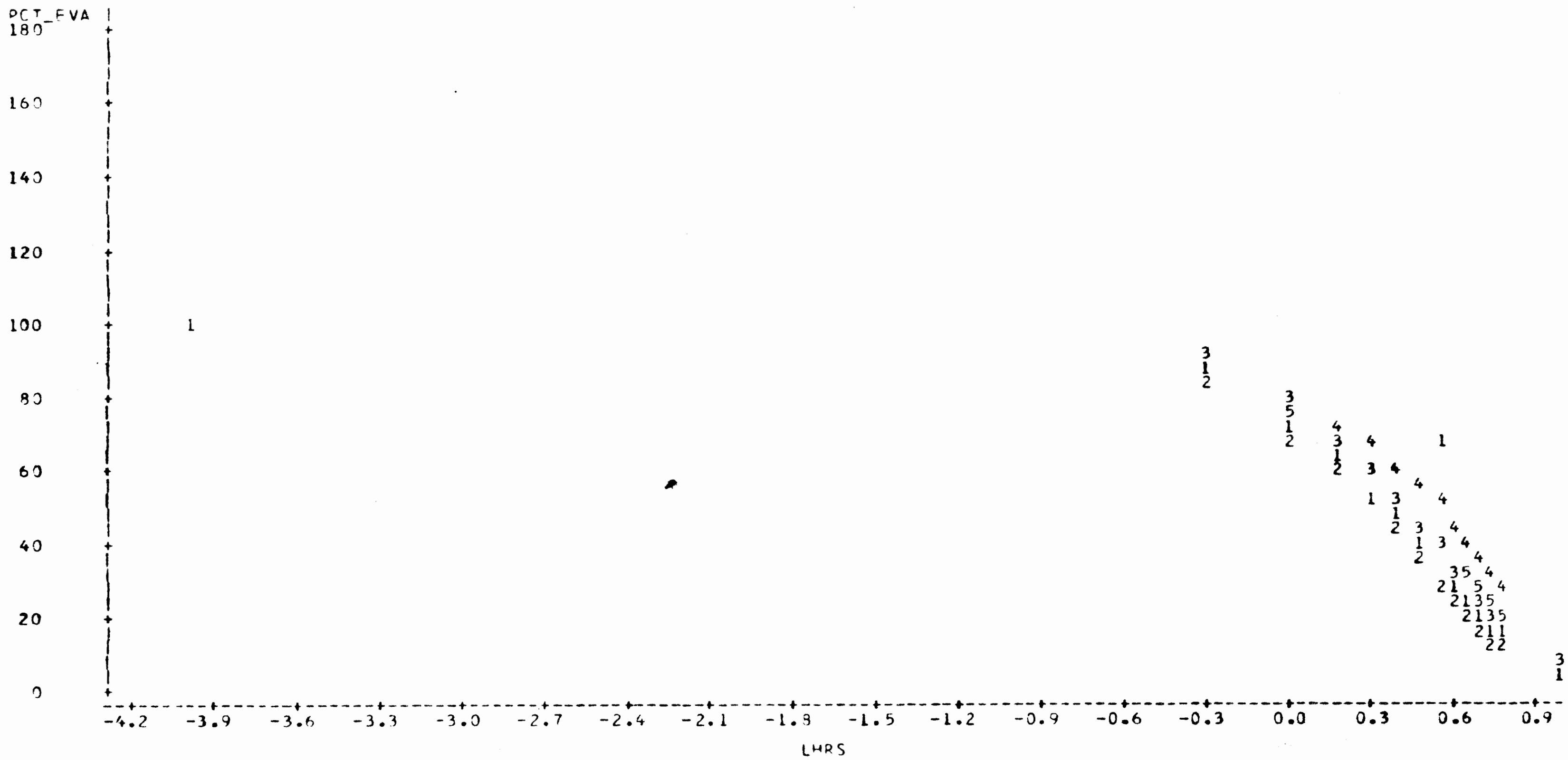
NOTE: 10 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS
SEA=2 ROLL=0 PASS=1 RATE=1*

21:03 THURSDAY, MARCH 23, 1978 1142

PLOT OF PCT_EVA*LHRS SYMBOL IS VALUE OF REP



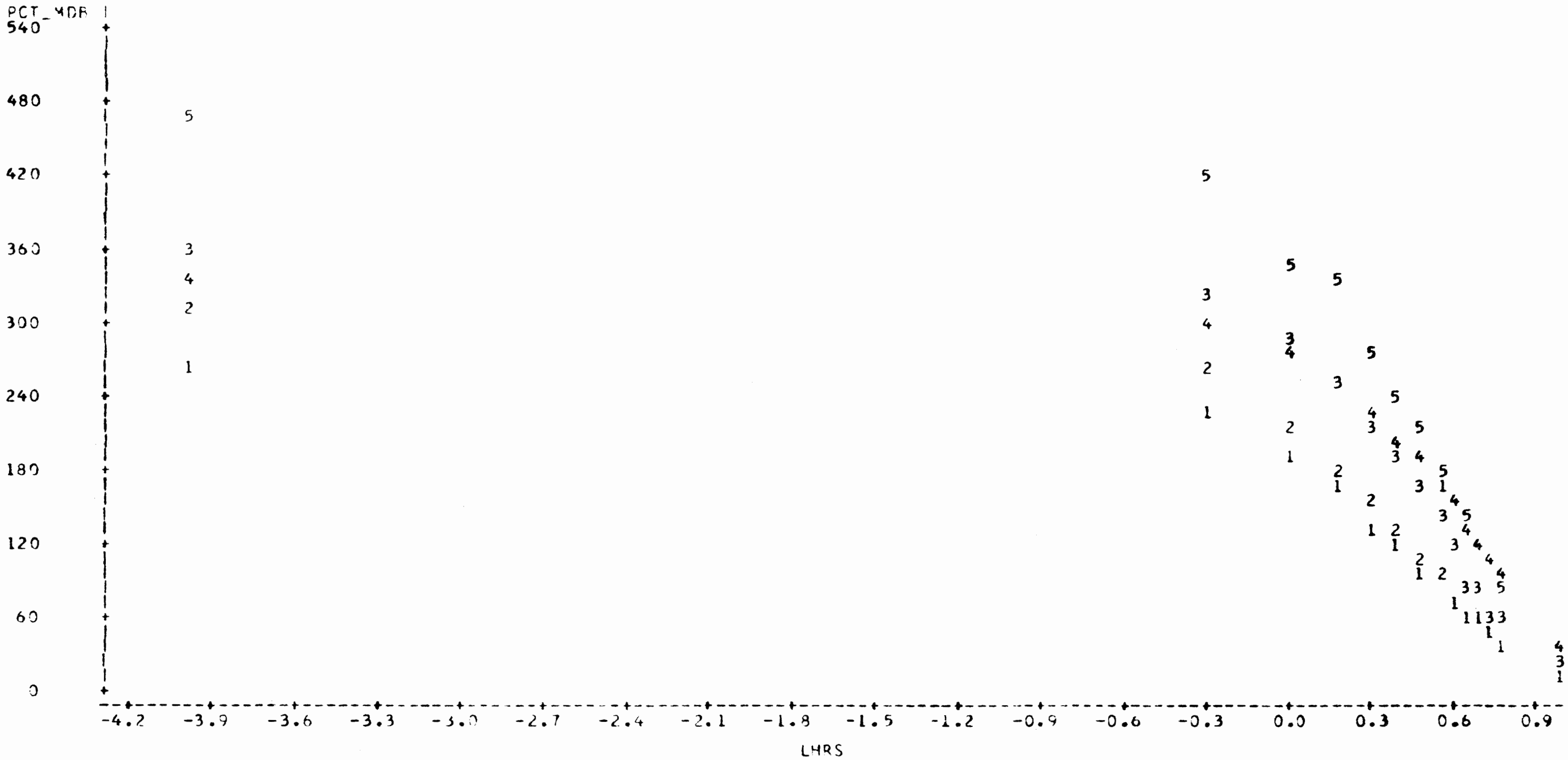
NOTE: 19 OBS HIDDEN

*Typical data for one roll.

HAY CONDITIONING ROLLS

SEA=2 ROLL=0 PASS=1 RATE=1* 21:03 THURSDAY, MARCH 23, 1978 1146

PLOT OF PCT_MDB*LHRS SYMBOL IS VALUE OF REP



NOTE: 12 OBS HIDDEN

*Typical data for one roll.

APPENDIX C

PREDICTIONS OF THE CONFIDENCE INTERVAL

LIMITS FOR SEASON 2, ROLL 0,

PASS 1 AND RATE 1

HAY CONDITIONING ROLLS *
SEA=2 ROLL=0 PASS=1 RATE=1

21:03 THURSDAY, MARCH 23, 1978 2

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: PCT_MWB

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	29653.61995300	14826.80997650	455.55	0.0001	0.931500	15.7219
ERROR	67	2180.65465639	32.54708442		STD DEV		PCT_MWB MEAN
CORRECTED TOTAL	69	31834.27460938			5.70500521		36.25703167

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	25656.60705354	788.29	0.0001	1	13287.74929757	408.26	0.0001
HR2	1	3997.01289946	122.81	0.0001	1	3997.01289946	122.81	0.0001

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	74.25729183	47.41	0.0001	1.56640491
HRS	-15.44420737	-20.21	0.0001	0.76435650
HR2	0.35783821	11.08	0.0001	0.07740939

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1	1	00.0	72.09677419	74.25729183	-2.16051764	62.44861428	86.06596938
2	1	00.5	62.17741935	66.74964759	-4.57222824	55.08219471	78.41710048
3	1	01.0	52.25806452	59.67092246	-7.41285795	48.09539682	71.24644810
4	1	01.5	45.64516129	53.02111643	-7.37595514	41.49907889	64.54315397
5	1	02.0	37.82258065	46.80022950	-8.97764885	35.30321228	58.29724672
6	1	02.5	33.22580645	41.00826163	-7.78245523	29.51656667	52.49995668
7	1	03.0	28.30645161	35.64521295	-7.33876134	24.14650872	47.14391719
8	1	03.5	47.90322581	30.71108333	17.19214247	19.19889187	42.22327480
9	1	04.0	20.00000000	26.20587282	-6.20587282	14.67800933	37.73373630
10	1	04.5	16.59354839	22.12958140	-5.53603301	10.58658422	33.67257858
11	1	05.0	15.48387097	18.48220909	-2.99833812	6.92577637	30.03864181
12	1	05.5	12.58064516	15.26375583	-2.68311072	3.69519292	26.83231883
13	1	06.0	11.29032258	12.47422177	-1.18389919	0.89289709	24.05554645
14	1	10.0	4.27419355	5.59903660	-1.32484305	-6.81935655	18.01742975
15	2	00.0	75.70312500	74.25729183	1.44583317	62.44861428	86.06596938
16	2	00.5	63.20312500	66.74964759	-3.54652259	55.08219471	78.41710048
17	2	01.0	52.26562500	59.67092246	-7.40529746	48.09539682	71.24644810
18	2	01.5	44.45312500	53.02111643	-8.56799143	41.49907889	64.54315397
19	2	02.0	38.20312500	46.80022950	-8.59710450	35.30321228	58.29724672
20	2	02.5	32.73437500	41.00826163	-8.27388663	29.51656667	52.49995668
21	2	03.0	27.26562500	35.64521295	-8.37958795	24.14650872	47.14391719
22	2	03.5	22.57812500	30.71108333	-8.13295833	19.19889187	42.22327480
23	2	04.0	17.89062500	26.20587282	-8.31524782	14.67800933	37.73373630
24	2	04.5	15.15625000	22.12958140	-6.97333140	10.58658422	33.67257858
25	2	05.0	13.20312500	18.48220909	-5.27908409	6.92577637	30.03864181
26	2	05.5	10.46875000	15.26375583	-4.79500583	3.69519292	26.83231883
27	2	06.0	9.29687500	12.47422177	-3.17734677	0.89289709	24.05554645
28	2	10.0	3.04687500	5.59903660	-2.55216160	-6.81935655	18.01742975
29	3	00.0	78.37209302	74.25729183	4.11480119	62.44861428	86.06596938
30	3	00.5	70.69767442	66.74964759	3.94802683	55.08219471	78.41710048
31	3	01.0	61.86046512	59.67092246	2.18954266	48.09539682	71.24644810
32	3	01.5	53.79844961	53.02111643	0.77733318	41.49907889	64.54315397
33	3	02.0	46.12403101	46.80022950	-0.67619849	35.30321228	58.29724672
34	3	02.5	40.46511628	41.00826163	-0.54314540	29.51656667	52.49995668
35	3	03.0	35.65891473	35.64521295	0.01370178	24.14650872	47.14391719
36	3	03.5	31.00775194	30.71108333	0.29666860	19.19889187	42.22327480
37	3	04.0	26.35658915	26.20587282	0.15071633	14.67800933	37.73373630
38	3	04.5	18.68217054	22.12958140	-3.44741086	10.58658422	33.67257858
39	3	05.0	18.29457364	18.48220909	-0.18763544	6.92577637	30.03864181
40	3	05.5	14.26356589	15.26375583	-1.00018999	3.69519292	26.83231883
41	3	06.0	13.10077519	12.47422177	0.62655342	0.89289709	24.05554645
42	3	10.0	5.42635659	5.59903660	-0.17268001	-6.81935655	18.01742975
43	4	00.0	77.34375000	74.25729183	3.08645817	62.44861428	86.06596938
44	4	00.5	69.75000000	66.74964759	3.00035241	55.08219471	78.41710048
45	4	01.0	62.89062500	59.67092246	3.21970254	48.09539682	71.24644810
46	4	01.5	56.25000000	53.02111643	3.22888357	41.49907889	64.54315397
47	4	02.0	51.17187500	46.80022950	4.37164550	35.30321228	58.29724672
48	4	02.5	47.26562500	41.00826163	6.25736332	29.51656667	52.49995668
49	4	03.0	42.96875000	35.64521295	7.32353705	24.14650872	47.14391719
50	4	03.5	39.06250000	30.71108333	8.35141667	19.19889187	42.22327480
51	4	04.0	35.15625000	26.20587282	8.95037718	14.67800933	37.73373630
52	4	04.5	31.25000000	22.12958140	9.12041860	10.58658422	33.67257858
53	4	05.0	27.73437500	18.48220909	9.25216591	6.92577637	30.03864181
54	4	05.5	23.82812500	15.26375583	8.56436917	3.69519292	26.83231883
55	4	06.0	21.09375000	12.47422177	8.61952823	0.89289709	24.05554645
56	4	10.0	7.03125000	5.59903660	1.43221340	-6.81935655	18.01742975
57	5	00.0	82.40000000	74.25729183	8.14270817	62.44861428	86.06596938
58	5	00.5	72.96000000	66.74964759	6.21035241	55.08219471	78.41710048
59	5	01.0	61.36000000	59.67092246	1.68907754	48.09539682	71.24644810
60	5	01.5	58.48000000	53.02111643	5.45888357	41.49907889	64.54315397
61	5	02.0	48.24000000	46.80022950	1.43977050	35.30321228	58.29724672
62	5	02.5	42.88000000	41.00826163	1.87173837	29.51656667	52.49995668
63	5	03.0	37.52000000	35.64521295	1.87478705	24.14650872	47.14391719
64	5	03.5	32.56000000	30.71108333	1.84891667	19.19889187	42.22327480
65	5	04.0	27.60000000	26.20587282	1.39412718	14.67800933	37.73373630
66	5	04.5	24.72000000	22.12958140	2.59041860	10.58658422	33.67257858
67	5	05.0	21.44000000	18.48220909	2.95779091	6.92577637	30.03864181
68	5	05.5	19.36000000	15.26375583	4.09624417	3.69519292	26.83231883
69	5	06.0	15.28000000	12.47422177	2.80577823	0.89289709	24.05554645
70	5	10.0	4.16000000	5.59903660	-1.43903660	-6.81935655	18.01742975

*Typical data for one roll.

SEA=2 HAY CONDITIONING ROLLS ROLL=0 PASS=1 RATE=1 * 21:03 THURSDAY, MARCH 23, 1978 9

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: PCT_EVA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	49765.02496156	24882.51248078	547.43	0.0001	0.942334	14.3572
ERROR	67	3045.35179215	45.45301182		STD DEV		PCT_EVA MEAN
CORRECTED TOTAL	69	52810.37675372			6.74188489		46.95811050

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	43039.33814384	946.90	0.0001	1	22325.63432822	491.19	0.0001
HR2	1	6725.68681773	147.97	0.0001	1	6725.68681773	147.97	0.0001

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	96.16005782	51.95	0.0001	1.85109763
HRS	-20.01897424	-22.16	0.0001	0.90327762
HR2	1.11277133	12.16	0.0001	0.09147848

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1	1	00.0	100.00000000	96.16005782	3.83994218	82.20516351	110.11495213
2	1	00.5	86.24161074	86.42876353	-0.18715279	72.64076135	100.21676572
3	1	01.0	72.48322148	77.25385491	-4.77063344	63.57448767	90.93322215
4	1	01.5	63.31096197	68.63533196	-5.32436999	55.01917423	82.25148968
5	1	02.0	52.46085011	60.57319467	-8.11234456	46.98660469	74.15978465
6	1	02.5	46.08501119	53.06744305	-6.98243187	39.48714259	66.64774352
7	1	03.0	39.26174497	46.11807710	-6.85633214	32.52949349	59.70666072
8	1	03.5	66.44295302	39.72509682	26.71785620	26.12057468	53.32961896
9	1	04.0	27.74049217	33.88850220	-6.14801003	20.26545967	47.51154474
10	1	04.5	23.15436242	28.60829325	-5.45393084	14.96736649	42.24922002
11	1	05.0	21.47651007	23.88446997	-2.40795991	10.22766577	37.54127418
12	1	05.5	17.44966443	19.71703235	-2.26736793	6.04589326	33.38817146
13	1	06.0	15.65995526	16.10598041	-0.44602516	2.41976015	29.79220066
14	1	10.0	5.92841163	7.24744887	-1.31903723	-7.42797631	21.92287405
15	2	00.0	100.00000000	96.16005782	3.83994218	82.20516351	110.11495213
16	2	00.5	83.48813209	86.42876353	-2.94063144	72.64076135	100.21676572
17	2	01.0	69.04024768	77.25385491	-8.21360723	63.57448767	90.93322215
18	2	01.5	58.72033024	68.63533196	-9.91500172	55.01917423	82.25148968
19	2	02.0	50.46439628	60.57319467	-10.10879839	46.98660469	74.15978466
20	2	02.5	43.24045408	53.06744305	-9.82698898	39.48714259	66.64774352
21	2	03.0	36.01651187	46.11807710	-10.10156524	32.52949349	59.70666072
22	2	03.5	29.82456140	39.72509682	-9.90053542	26.12057468	53.32961896
23	2	04.0	23.63261094	33.88850220	-10.25589126	20.26545967	47.51154474
24	2	04.5	20.02063983	28.60829326	-8.58765342	14.96736649	42.24922002
25	2	05.0	17.44066047	23.88446997	-5.44380950	10.22766577	37.54127418
26	2	05.5	13.82868937	19.71703235	-5.88834299	6.04589326	33.38817146
27	2	06.0	12.28070175	16.10598041	-3.82527866	2.41976016	29.79220066
28	2	10.0	4.02476780	7.24744887	-3.22268107	-7.42797631	21.92287405
29	3	00.0	100.00000000	96.16005782	3.83994218	82.20516351	110.11495213
30	3	00.5	90.20771513	86.42876353	3.77895160	72.64076135	100.21676572
31	3	01.0	78.93175074	77.25385491	1.67789583	63.57448767	90.93322215
32	3	01.5	68.64490603	68.63533196	0.00957408	55.01917423	82.25148968
33	3	02.0	58.85262117	60.57319467	-1.72057351	46.98660469	74.15978466
34	3	02.5	51.63204748	53.06744305	-1.43539558	39.48714259	66.64774352
35	3	03.0	45.49950544	46.11807710	-0.61857166	32.52949349	59.70666072
36	3	03.5	39.56478734	39.72509682	-0.16030948	26.12057468	53.32961896
37	3	04.0	33.63006924	33.88850220	-0.25843297	20.26545967	47.51154474
38	3	04.5	23.83778437	28.60829325	-4.77050888	14.96736649	42.24922002
39	3	05.0	23.34322453	23.88446997	-0.54124544	10.22766577	37.54127418
40	3	05.5	18.19980218	19.71703236	-1.51723018	6.04589326	33.38817146
41	3	06.0	16.71612265	16.10598041	0.61014224	2.41976016	29.79220066
42	3	10.0	6.92383778	7.24744887	-0.32361108	-7.42797631	21.92287405
43	4	00.0	100.00000000	96.16005782	3.83994218	82.20516351	110.11495213
44	4	00.5	88.88888889	86.42876353	2.46012536	72.64076135	100.21676572
45	4	01.0	81.31313131	77.25385491	4.05927640	63.57448767	90.93322215
46	4	01.5	72.72727273	68.63533196	4.09194077	55.01917423	82.25148968
47	4	02.0	66.16161616	60.57319467	5.58842149	46.98660469	74.15978466
48	4	02.5	61.11111111	53.06744305	8.04366806	39.48714259	66.64774352
49	4	03.0	55.55555556	46.11807710	9.43747845	32.52949349	59.70666072
50	4	03.5	50.50505051	39.72509682	10.77995369	26.12057468	53.32961896
51	4	04.0	45.45454545	33.88850220	11.56604325	20.26545967	47.51154474
52	4	04.5	40.40404040	28.60829325	11.79574715	14.96736649	42.24922002
53	4	05.0	35.85858586	23.88446997	11.97411598	10.22766577	37.54127413
54	4	05.5	30.80808081	19.71703236	11.09104845	6.04589326	33.38817146
55	4	06.0	27.27272727	16.10598041	11.16674686	2.41976016	29.79220066
56	4	10.0	9.09090909	7.24744887	1.84346022	-7.42797631	21.92287405
57	5	00.0	100.00000000	96.16005782	3.83994218	82.20516351	110.11495213
58	5	00.5	88.54368932	86.42876353	2.11492579	72.64076135	100.21676572
59	5	01.0	74.46601942	77.25385491	-2.78783549	63.57448767	90.93322215
60	5	01.5	70.97087379	68.63533196	2.33554183	55.01917423	82.25148968
61	5	02.0	58.54368932	60.57319467	-2.02950535	46.98660469	74.15978466
62	5	02.5	52.03883495	53.06744305	-1.02860810	39.48714259	66.64774352
63	5	03.0	45.53398058	46.11807710	-0.58409652	32.52949349	59.70666072
64	5	03.5	39.51456311	39.72509682	-0.21053371	26.12057468	53.32961896
65	5	04.0	33.49514563	33.88850220	-0.39335657	20.26545967	47.51154474
66	5	04.5	30.00000000	28.60829326	1.39170674	14.96736649	42.24922002
67	5	05.0	26.01941748	23.88446997	2.13494750	10.22766577	37.54127418
68	5	05.5	23.49514563	19.71703236	3.77811327	6.04589326	33.38817146
69	5	06.0	18.54368932	16.10598041	2.43770891	2.41976016	29.79220066
70	5	10.0	5.04854369	7.24744887	-2.19890518	-7.42797631	21.92287405

*Typical data for one roll.

HAY CONDITIONING ROLLS *
SEA=2 ROLL=0 PASS=1 RATE=1

21:03 THURSDAY, MARCH 23, 1978

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: PCT_MOB

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	604735.45061757	302367.72530878	139.44	0.0001	0.806286	28.3290
ERROR	67	145290.47860283	2168.51460601		STD DEV		PCT_MOB MEAN
CORRECTED TOTAL	69	750025.92922040			46.56731263		164.38620100

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	523977.18684848	241.63	0.0001	1	269881.16631914	124.45	0.0001
HR2	1	80758.26376909	37.24	0.0001	1	80758.26376909	37.24	0.0001

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	335.69670507	26.26	0.0001	12.78583709
HRS	-69.60271915	-11.16	0.0001	6.23908774
HR2	3.85594736	6.10	0.0001	0.63185698

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1	1	00.0	258.38150289	335.69670507	-77.31520218	239.30794480	432.08546535
2	1	00.5	222.83236994	301.85933234	-79.02696240	206.62332354	397.09534114
3	1	01.0	187.28323699	269.94993328	-82.66669629	175.46428398	364.43558258
4	1	01.5	163.58381503	239.96850790	-76.38469287	145.91945718	334.01755862
5	1	02.0	135.54913295	211.91505620	-76.36592326	118.07023474	305.75987766
6	1	02.5	119.07514451	185.78957818	-66.71443367	91.98819948	279.59095689
7	1	03.0	101.44508671	161.59207384	-60.14698714	67.73348205	255.45066563
8	1	03.5	171.67630058	139.32254318	32.35375740	45.35386136	233.29122499
9	1	04.0	71.67630058	118.98098619	-47.30468561	24.88438097	213.07759141
10	1	04.5	59.82658960	100.56740288	-40.74081328	6.34726830	194.78753747
11	1	05.0	55.49132948	84.08179325	-28.59046377	-10.24800940	178.41159591
12	1	05.5	45.08670520	69.52415730	-24.43745210	-24.90465884	163.95297344
13	1	06.0	40.46242775	56.89449503	-16.43206729	-37.63848914	151.42747920
14	1	10.0	15.31791908	25.26424928	-9.94633020	-76.10133673	126.62983529
15	2	00.0	311.57556270	335.69670507	-24.12114237	239.30794480	432.08546535
16	2	00.5	260.12861736	301.85933234	-41.73071498	206.62332354	397.09534114
17	2	01.0	215.11254019	269.94993328	-54.83739309	175.46428398	364.43558258
18	2	01.5	182.95819936	239.96850790	-57.01030855	145.91945718	334.01755862
19	2	02.0	157.23472669	211.91505620	-54.68032952	118.07023474	305.75987766
20	2	02.5	134.72668810	185.78957818	-51.06289008	91.98819948	279.59095689
21	2	03.0	112.21864952	161.59207384	-49.37342432	67.73348205	255.45066563
22	2	03.5	92.92604502	139.32254318	-46.39649816	45.35386136	233.29122499
23	2	04.0	73.63344051	118.98098619	-45.34754568	24.88438097	213.07759141
24	2	04.5	62.37942122	100.56740288	-38.18798166	6.34725830	194.78753747
25	2	05.0	54.34083601	84.08179325	-29.74095724	-10.24800940	178.41159591
26	2	05.5	43.08681672	69.52415730	-26.43734058	-24.90465884	153.95297344
27	2	06.0	38.26365559	56.89449503	-18.63083944	-37.63848914	151.42747920
28	2	10.0	12.54019293	25.26424923	-12.72405635	-76.10133673	126.62983529
29	3	00.0	362.36559140	335.69670507	26.66888632	239.30794480	432.08546535
30	3	00.5	326.88172043	301.85933234	25.02238809	206.62332354	397.09534114
31	3	01.0	286.02150538	269.94993328	16.07157209	175.46428398	364.43558258
32	3	01.5	248.74551971	239.96850790	8.77701181	145.91945718	334.01755862
33	3	02.0	213.26164875	211.91505623	1.34659254	118.07023474	305.75987766
34	3	02.5	187.09677419	185.78957818	1.30719601	91.98819948	279.59095689
35	3	03.0	164.87455197	161.59207384	3.28247813	67.73348205	255.45066563
36	3	03.5	143.36917563	139.32254318	4.04663245	45.35386136	233.29122499
37	3	04.0	121.86379928	118.98098619	2.88281309	24.88438097	213.07759141
38	3	04.5	86.37992832	100.56740283	-14.18747457	6.34726830	194.78753747
39	3	05.0	84.58781362	84.08179325	0.50602037	-10.24800940	178.41159591
40	3	05.5	65.94982079	69.52415730	-3.57433651	-24.90465884	153.95297344
41	3	06.0	60.57347670	56.89449503	3.67898167	-37.63848914	151.42747920
42	3	10.0	25.08960573	25.26424928	-0.17464354	-76.10133673	126.62983529
43	4	00.0	341.37931034	335.69670507	5.68260527	239.30794480	432.08546535
44	4	00.5	303.44827586	301.85933234	1.58894352	206.62332354	397.09534114
45	4	01.0	277.58620690	269.94993328	7.63627361	175.46428398	364.43558258
46	4	01.5	248.27586207	239.96850790	8.30735417	145.91945718	334.01755862
47	4	02.0	225.86206897	211.91505620	13.94701276	118.07023474	305.75987766
48	4	02.5	208.62068966	185.78957818	22.83111147	91.98819948	279.59095689
49	4	03.0	189.65517241	161.59207384	28.06309857	67.73348205	255.45066563
50	4	03.5	172.41379310	139.32254318	33.09124993	45.35386136	233.29122499
51	4	04.0	155.17241379	118.98098619	36.19142760	24.88438097	213.07759141
52	4	04.5	137.93103448	100.56740283	37.36363160	6.34726830	194.78753747
53	4	05.0	117.41379310	84.08179325	33.33199985	-10.24800940	178.41159591
54	4	05.5	105.17241379	69.52415730	35.64825649	-24.90465884	163.95297344
55	4	06.0	93.10344828	56.89449503	36.20895324	-37.63848914	151.42747920
56	4	10.0	31.03448276	25.26424928	5.77023348	-76.10133673	126.62983529
57	5	00.0	468.18181818	335.69670507	132.48511311	239.30794480	432.08546535
58	5	00.5	414.54545455	301.85933234	112.68612221	206.62332354	397.09534114
59	5	01.0	348.63636364	269.94993328	78.68643035	175.46428398	364.43558258
60	5	01.5	332.27272727	239.96850790	92.30421937	145.91945718	334.01755862
61	5	02.0	274.09090909	211.91505620	62.17585289	118.07023474	305.75987766
62	5	02.5	243.63636364	185.78957819	57.84678545	91.98819948	279.59095689
63	5	03.0	213.18181818	161.59207384	51.58974434	67.73348205	255.45066563
64	5	03.5	185.00000000	139.32254318	45.67745682	45.35386136	233.29122499
65	5	04.0	156.81818182	118.98098619	37.83719563	24.88438097	213.07759141
66	5	04.5	140.45454545	100.56740283	39.88714257	6.34726830	194.78753747
67	5	05.0	121.81818182	84.08179325	37.73638856	-10.24800940	178.41159591
68	5	05.5	110.00000000	69.52415730	40.47584270	-24.90465884	163.95297344
69	5	06.0	86.81818182	56.89449503	29.92368679	-37.63848914	151.42747920
70	5	10.0	23.63636364	25.26424928	-1.62788564	-76.10133673	126.62983529

*Typical data for one roll.

HAY CONDITIONING ROLLS
SEA=2 ROLL=0 PASS=1 RATE=1 *

21:03 THURSDAY, MARCH 23, 1978

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: LPCT_MWB

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	3.55982510	1.77991255	190.06	0.0001	0.859766	6.3635
ERROR	62	0.58063291	0.00936505		STD DEV		LPCT_MWB MEAN
CORRECTED TOTAL	64	4.14045801			0.09677317		1.52074214

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	3.25231312	347.28	0.0001	1	1.20408035	128.57	0.0001
HR2	1	0.30751198	32.84	0.0001	1	0.30751198	32.84	0.0001

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	2.01113237	59.75	0.0001	0.03366171
HRS	-0.17560582	-11.34	0.0001	0.01548696
HR2	0.00849376	5.73	0.0001	0.00148226

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1 *	1	00.0	.	2.01113237	.	1.80631667	2.21594806
2	1	00.5	1.85791583	1.92545290	-0.06753707	1.72448630	2.12641950
3	1	01.0	1.79363269	1.84402031	-0.05038762	1.64569553	2.04234509
4	1	01.5	1.71815332	1.76683460	-0.04868128	1.57017716	1.96349204
5	1	02.0	1.65939475	1.69389577	-0.03450103	1.49815544	1.88963611
6	1	02.5	1.57775116	1.62520382	-0.04745267	1.42983571	1.82057194
7	1	03.0	1.52147553	1.56075875	-0.03928323	1.36539714	1.75612038
8	1	03.5	1.45188543	1.50056057	-0.04867514	1.30498809	1.69613305
9	1	04.0	1.68036476	1.44460926	0.23575550	1.24872387	1.64049466
10	1	04.5	1.30103000	1.39290484	-0.09187484	1.19668582	1.58912386
11	1	05.0	1.22254866	1.34544729	-0.12289863	1.14892128	1.54197331
12	1	05.5	1.18987954	1.30223663	-0.11235708	1.10544384	1.49902942
13	1	06.0	1.09970291	1.26327284	-0.16356993	1.06623363	1.46031206
14	1	10.0	1.05270635	1.10445027	-0.05174392	0.89327399	1.31562654
15 *	2	00.0	.	2.01113237	.	1.80631667	2.21594806
16	2	00.5	1.87911381	1.92545290	-0.04633909	1.72448630	2.12641950
17	2	01.0	1.80073855	1.84402031	-0.04328176	1.64569553	2.04234509
18	2	01.5	1.71821615	1.76683460	-0.04861845	1.57017716	1.96349204
19	2	02.0	1.64790230	1.69389577	-0.04599348	1.49815544	1.88963611
20	2	02.5	1.58209889	1.62520382	-0.04310493	1.42983571	1.82057194
21	2	03.0	1.51500405	1.56075876	-0.04575470	1.36539714	1.75612038
22	2	03.5	1.43561546	1.50056057	-0.06494511	1.30498809	1.69613305
23	2	04.0	1.35368787	1.44460926	-0.09092139	1.24872387	1.64049466
24	2	04.5	1.25262551	1.39290484	-0.14027932	1.19668582	1.58912386
25	2	05.0	1.18059176	1.34544729	-0.16485553	1.14892128	1.54197331
26	2	05.5	1.12067673	1.30223663	-0.18155989	1.10544384	1.49902942
27	2	06.0	1.01989483	1.26327284	-0.24337801	1.06623363	1.46031206
28	2	10.0	0.96833699	1.10445027	-0.13611327	0.89327399	1.31562654
29 *	3	00.0	.	2.01113237	.	1.80631667	2.21594806
30	3	00.5	1.89416145	1.92545290	-0.03129145	1.72448630	2.12641950
31	3	01.0	1.84940513	1.84402031	0.00538482	1.64569553	2.04234509
32	3	01.5	1.79141318	1.76683460	0.02457858	1.57017716	1.96349204
33	3	02.0	1.73076976	1.69389577	0.03687399	1.49815544	1.88963611
34	3	02.5	1.66392726	1.62520382	0.03872343	1.42983571	1.82057194
35	3	03.0	1.60708079	1.56075876	0.04632204	1.36539714	1.75612038
36	3	03.5	1.55216812	1.50056057	0.05160755	1.30498809	1.69613305
37	3	04.0	1.49147028	1.44460926	0.04686102	1.24872387	1.64049466
38	3	04.5	1.42088921	1.39290484	0.02798437	1.19668582	1.58912386
39	3	05.0	1.27142733	1.34544729	-0.07401996	1.14892128	1.54197331
40	3	05.5	1.26232229	1.30223663	-0.03991433	1.10544384	1.49902942
41	3	06.0	1.15422811	1.26327284	-0.10904473	1.06623363	1.46031206
42	3	10.0	1.11729699	1.10445027	0.01284673	0.89327399	1.31562654
43 *	4	00.0	.	2.01113237	.	1.80631667	2.21594806
44	4	00.5	1.88842522	1.92545290	-0.03702767	1.72448630	2.12641950
45	4	01.0	1.83727270	1.84402031	-0.00674761	1.64569553	2.04234509
46	4	01.5	1.79858591	1.76683460	0.03175131	1.57017716	1.96349204
47	4	02.0	1.75012253	1.69389577	0.05622675	1.49815544	1.88963611
48	4	02.5	1.70903133	1.62520382	0.08382751	1.42983571	1.82057194
49	4	03.0	1.67454541	1.56075875	0.11378665	1.36539714	1.75612038
50	4	03.5	1.63315272	1.50056057	0.13259215	1.30498809	1.69613305
51	4	04.0	1.59176003	1.44460926	0.14715077	1.24872387	1.64049466
52	4	04.5	1.54600254	1.39290484	0.15309771	1.19668582	1.58912386
53	4	05.0	1.49485002	1.34544729	0.14940273	1.14892128	1.54197331
54	4	05.5	1.44301838	1.30223663	0.14078176	1.10544384	1.49902942
55	4	06.0	1.37708987	1.26327284	0.11381703	1.06623363	1.46031206
56	4	10.0	1.32415379	1.10445027	0.21970353	0.89327399	1.31562654
57 *	5	00.0	.	2.01113237	.	1.80631667	2.21594806
58	5	00.5	1.91592721	1.92545290	-0.00952569	1.72448630	2.12641950
59	5	01.0	1.86308483	1.84402031	0.01906452	1.64569553	2.04234509
60	5	01.5	1.78788535	1.76683460	0.02105075	1.57017716	1.96349204
61	5	02.0	1.76700736	1.69389577	0.07311159	1.49815544	1.88963611
62	5	02.5	1.68340730	1.62520382	0.05820347	1.42983571	1.82057194
63	5	03.0	1.63225478	1.56075875	0.07149602	1.36539714	1.75612038
64	5	03.5	1.57426283	1.50056057	0.07370226	1.30498809	1.69613305
65	5	04.0	1.51268440	1.44460925	0.06807513	1.24872387	1.64049466
66	5	04.5	1.44090908	1.39290484	0.04800424	1.19668582	1.58912386
67	5	05.0	1.39304847	1.34544729	0.04760117	1.14892128	1.54197331
68	5	05.5	1.33122478	1.30223663	0.02898815	1.10544384	1.49902942
69	5	06.0	1.28690535	1.26327284	0.02363251	1.06623363	1.46031206
70	5	10.0	1.18412335	1.10445027	0.07967309	0.89327399	1.31562654

* OBSERVATION WAS NOT USED IN THIS ANALYSIS

*Typical data for only one roll.

HAY CONDITIONING ROLLS *
SFA=2 ROLL=0 PASS=1 RATE=1

21:03 THURSDAY, MARCH 23, 1978

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: LPCT_EVA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	7.03966278	3.51983139	458.24	0.0001	0.931874	5.5739
ERROR	67	0.51464235	0.00768123		STD DEV		LPCT_EVA MEAN
CORRECTED TOTAL	69	7.55430513			0.08764262		1.57237104

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	7.03961358	916.47	0.0001	1	0.87414431	113.80	0.0001
HR2	1	0.00004919	0.01	0.9365	1	0.00004919	0.01	0.9365

PARAMETER	ESTIMATE	T FOR HO: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	2.00901591	83.49	0.0001	0.02406375
HRS	-0.12526550	-10.67	0.0001	0.01174236
HR2	0.00009517	0.08	0.9365	0.00118919

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1	1	00.0	2.00000000	2.00901591	-0.00901591	1.82760617	2.19042564
2	1	00.5	1.93571686	1.94640695	-0.01069009	1.76716677	2.12564713
3	1	01.0	1.86023749	1.88384557	-0.02360808	1.70601762	2.06167353
4	1	01.5	1.80147891	1.82133178	-0.01985287	1.64432553	1.99833803
5	1	02.0	1.71983532	1.75886557	-0.03903025	1.58224369	1.93548745
6	1	02.5	1.66355970	1.69644695	-0.03288725	1.51990683	1.87298706
7	1	03.0	1.59396960	1.63407591	-0.04010631	1.45742811	1.81072370
8	1	03.5	1.82244893	1.57175245	0.25069647	1.39489746	1.74860744
9	1	04.0	1.44311416	1.50947659	-0.06636242	1.33238083	1.68657233
10	1	04.5	1.36463283	1.44724829	-0.08261547	1.26992005	1.62457653
11	1	05.0	1.33196371	1.38506759	-0.05310388	1.20753294	1.56260223
12	1	05.5	1.24178708	1.32293447	-0.08114739	1.14521347	1.50065546
13	1	06.0	1.19479052	1.26084893	-0.06605841	1.08293189	1.43876597
14	1	10.0	0.77293835	0.76587765	0.00706070	0.57510122	0.95665409
15	2	00.0	2.00000000	2.00901591	-0.00901591	1.82760617	2.19042564
16	2	00.5	1.92162474	1.94640695	-0.02478220	1.76716677	2.12564713
17	2	01.0	1.83910234	1.88384557	-0.04474323	1.70601762	2.06167353
18	2	01.5	1.76878849	1.82133178	-0.05254329	1.64432553	1.99833803
19	2	02.0	1.70298508	1.75886557	-0.05588049	1.58224369	1.93548745
20	2	02.5	1.63589025	1.69644695	-0.06055670	1.51990683	1.87298706
21	2	03.0	1.55650165	1.63407591	-0.07757426	1.45742811	1.81072370
22	2	03.5	1.47457407	1.57175245	-0.09717839	1.39489746	1.74860744
23	2	04.0	1.37351171	1.50947659	-0.13596488	1.33238083	1.68657233
24	2	04.5	1.30147795	1.44724829	-0.14577034	1.26992005	1.62457653
25	2	05.0	1.24156293	1.38506759	-0.14350466	1.20753294	1.56260223
26	2	05.5	1.14078102	1.32293447	-0.18215345	1.14521347	1.50065546
27	2	06.0	1.08922318	1.26084893	-0.17162575	1.08293189	1.43876597
28	2	10.0	0.60474083	0.76587765	-0.16113682	0.57510122	0.95665409
29	3	00.0	2.00000000	2.00901591	-0.00901591	1.82760617	2.19042564
30	3	00.5	1.95524368	1.94640695	0.00883674	1.76716677	2.12564713
31	3	01.0	1.89725174	1.88384557	0.01340616	1.70601762	2.06167353
32	3	01.5	1.83660831	1.82133178	0.01527653	1.64432553	1.99833803
33	3	02.0	1.76976581	1.75886557	0.01090024	1.58224369	1.93548745
34	3	02.5	1.71291935	1.69644695	0.01647240	1.51990683	1.87298706
35	3	03.0	1.65800668	1.63407591	0.02393077	1.45742811	1.81072370
36	3	03.5	1.59730884	1.57175245	0.02555638	1.39489746	1.74860744
37	3	04.0	1.52672776	1.50947659	0.01725118	1.33238083	1.68657233
38	3	04.5	1.37726589	1.44724829	-0.06998241	1.26992005	1.62457653
39	3	05.0	1.36816085	1.38506759	-0.01690674	1.20753294	1.56260223
40	3	05.5	1.26006667	1.32293447	-0.06286780	1.14521347	1.50065546
41	3	06.0	1.22313555	1.26084893	-0.03771338	1.08293189	1.43876597
42	3	10.0	0.84034688	0.76587765	0.07446923	0.57510122	0.95665409
43	4	00.0	2.00000000	2.00901591	-0.00901591	1.82760617	2.19042564
44	4	00.5	1.94884748	1.94640695	0.00244053	1.76716677	2.12564713
45	4	01.0	1.91016069	1.88384557	0.02631511	1.70601762	2.06167353
46	4	01.5	1.86169730	1.82133178	0.04036552	1.64432553	1.99833803
47	4	02.0	1.82060611	1.75886557	0.06174053	1.58224369	1.93548745
48	4	02.5	1.78612018	1.69644695	0.08967323	1.51990683	1.87298706
49	4	03.0	1.74472749	1.63407591	0.11065159	1.45742811	1.81072370
50	4	03.5	1.70333481	1.57175245	0.13158236	1.39489746	1.74860744
51	4	04.0	1.65757732	1.50947658	0.14810074	1.33238083	1.68657233
52	4	04.5	1.60642480	1.44724829	0.15917650	1.26992005	1.62457653
53	4	05.0	1.55459316	1.38506759	0.16952557	1.20753294	1.56260223
54	4	05.5	1.48866464	1.32293447	0.16573018	1.14521347	1.50065546
55	4	06.0	1.43572857	1.26084893	0.17487964	1.08293189	1.43876597
56	4	10.0	0.95860731	0.76587765	0.19272966	0.57510122	0.95665409
57	5	00.0	2.00000000	2.00901591	-0.00901591	1.82760617	2.19042564
58	5	00.5	1.94715761	1.94640695	0.00075067	1.76716677	2.12564713
59	5	01.0	1.87195814	1.88384557	-0.01188743	1.70601762	2.06167353
60	5	01.5	1.85108015	1.82133178	0.02974837	1.64432553	1.99833803
61	5	02.0	1.76748009	1.75886557	0.00861451	1.58224369	1.93548745
62	5	02.5	1.71632756	1.69644695	0.01988062	1.51990683	1.87298706
63	5	03.0	1.65833562	1.63407591	0.02425971	1.45742811	1.81072370
64	5	03.5	1.59675718	1.57175245	0.02500473	1.39489746	1.74860744
65	5	04.0	1.52498187	1.50947658	0.01550529	1.33238083	1.68657233
66	5	04.5	1.47712125	1.44724829	0.02987296	1.26992005	1.62457653
67	5	05.0	1.41529757	1.38506759	0.03022998	1.20753294	1.56260223
68	5	05.5	1.37097814	1.32293447	0.04804367	1.14521347	1.50065546
69	5	06.0	1.26819614	1.26084893	0.00734721	1.08293189	1.43876597
70	5	10.0	0.70316612	0.76587765	-0.06271154	0.57510122	0.95665409

*Typical data for only one roll.

HAY CONDITIONING ROLLS
SEA=2 ROLL=0 PASS=1 RATE=1 *

21:03 THURSDAY, MARCH 23, 1978

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: LPCT_MDB

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	2	3.55982510	1.77991255	92.79	0.0001	0.749581	6.3902
ERROR	62	1.18926276	0.01918166		STD DEV		LPCT_MDB MEAN
CORRECTED TOTAL	64	4.74908786			0.13849786		2.16735814

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE IV SS	F VALUE	PR > F
HRS	1	3.25231312	169.55	0.0001	1	1.20408035	62.77	0.0001
HR2	1	0.30751198	16.03	0.0002	1	0.30751198	16.03	0.0002

PARAMETER	ESTIMATE	T FOR HO: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	2.65774837	55.17	0.0001	0.04817528
HRS	-0.17560582	-7.92	0.0001	0.02216431
HR2	0.00849376	4.00	0.0002	0.00212135

OBSERVATION	REP	TIME	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL INDIVIDUAL	UPPER 95% CL INDIVIDUAL
1 *	1	00.0	.	2.65774837	.	2.36462440	2.95087233
2	1	00.5	2.41226142	2.57206890	-0.15980748	2.28445360	2.85968419
3	1	01.0	2.34797828	2.49063631	-0.14265803	2.20680188	2.77447074
4	1	01.5	2.27249891	2.41345060	-0.14095169	2.13200240	2.69489879
5	1	02.0	2.21374033	2.34051177	-0.12677144	2.06037609	2.62064744
6	1	02.5	2.13209674	2.27181982	-0.13972308	1.99221686	2.55142278
7	1	03.0	2.07582112	2.20737475	-0.13155364	1.92778108	2.48696842
8	1	03.5	2.00623102	2.14717657	-0.14094555	1.86728112	2.42707201
9	1	04.0	2.23471035	2.09122526	0.14348509	1.81088199	2.37156853
10	1	04.5	1.85537558	2.03952083	-0.18414525	1.75870009	2.32034158
11	1	05.0	1.77689425	1.99206329	-0.21516904	1.71080318	2.27332339
12	1	05.5	1.74422513	1.94885262	-0.20462749	1.66721072	2.23049452
13	1	06.0	1.65404850	1.90988884	-0.25584034	1.62789426	2.19188342
14	1	10.0	1.60705194	1.75106626	-0.14401432	1.44883929	2.05329323
15 *	2	00.0	.	2.65774837	.	2.36462440	2.95087233
16	2	00.5	2.49356339	2.57206890	-0.07850551	2.28445360	2.85968419
17	2	01.0	2.41518813	2.49063631	-0.07544817	2.20680188	2.77447074
18	2	01.5	2.33266573	2.41345060	-0.08078487	2.13200240	2.69489879
19	2	02.0	2.26235188	2.34051177	-0.07815989	2.06037609	2.62064744
20	2	02.5	2.19654847	2.27181982	-0.07527135	1.99221686	2.55142278
21	2	03.0	2.12945363	2.20737475	-0.07792112	1.92778108	2.48696842
22	2	03.5	2.05006504	2.14717657	-0.09711153	1.86728112	2.42707201
23	2	04.0	1.96813745	2.09122526	-0.12308781	1.81088199	2.37156853
24	2	04.5	1.86707509	2.03952083	-0.17244574	1.75870009	2.32034158
25	2	05.0	1.79504134	1.99206329	-0.19702195	1.71080318	2.27332339
26	2	05.5	1.73512632	1.94885262	-0.21372631	1.66721072	2.23049452
27	2	06.0	1.63434441	1.90988884	-0.27554443	1.62789426	2.19188342
28	2	10.0	1.58278657	1.75106626	-0.16827969	1.44883929	2.05329323
29 *	3	00.0	.	2.65774837	.	2.36462440	2.95087233
30	3	00.5	2.55914695	2.57206890	-0.01292194	2.28445360	2.85968419
31	3	01.0	2.51439064	2.49063631	0.02375433	2.20680188	2.77447074
32	3	01.5	2.45639869	2.41345060	0.04294809	2.13200240	2.69489879
33	3	02.0	2.39575527	2.34051177	0.05524350	2.06037609	2.62064744
34	3	02.5	2.32891276	2.27181982	0.05709294	1.99221686	2.55142278
35	3	03.0	2.27206630	2.20737475	0.06469155	1.92778108	2.48696842
36	3	03.5	2.21715363	2.14717657	0.06997706	1.86728112	2.42707201
37	3	04.0	2.15645579	2.09122526	0.06523053	1.81088199	2.37156853
38	3	04.5	2.08587471	2.03952083	0.04635388	1.75870009	2.32034158
39	3	05.0	1.93641284	1.99206329	-0.05565045	1.71080318	2.27332339
40	3	05.5	1.92730780	1.94885262	-0.02154482	1.66721072	2.23049452
41	3	06.0	1.81921362	1.90988884	-0.09067522	1.62789426	2.19188342
42	3	10.0	1.78228250	1.75106626	0.03121624	1.44883929	2.05329323
43 *	4	00.0	.	2.65774837	.	2.36462440	2.95087233
44	4	00.5	2.53323720	2.57206890	-0.03883170	2.28445360	2.85968419
45	4	01.0	2.48208467	2.49063631	-0.00855163	2.20680188	2.77447074
46	4	01.5	2.44339788	2.41345060	0.02994729	2.13200240	2.69489879
47	4	02.0	2.39493450	2.34051177	0.05442273	2.06037609	2.62064744
48	4	02.5	2.35384330	2.27181982	0.08202348	1.99221686	2.55142278
49	4	03.0	2.31935738	2.20737475	0.11198262	1.92778108	2.48696842
50	4	03.5	2.27796469	2.14717657	0.13078813	1.86728112	2.42707201
51	4	04.0	2.23657201	2.09122526	0.14534675	1.81088199	2.37156853
52	4	04.5	2.19081452	2.03952083	0.15129368	1.75870009	2.32034158
53	4	05.0	2.13966199	1.99206329	0.14759871	1.71080318	2.27332339
54	4	05.5	2.08783036	1.94885262	0.13897773	1.66721072	2.23049452
55	4	06.0	2.02190184	1.90988884	0.11201300	1.62789426	2.19188342
56	4	10.0	1.96896577	1.75106625	0.21789950	1.44883929	2.05329323
57 *	5	00.0	.	2.65774837	.	2.36462440	2.95087233
58	5	00.5	2.67041454	2.57206890	0.09834565	2.28445360	2.85968419
59	5	01.0	2.61757216	2.49063631	0.12693585	2.20680188	2.77447074
60	5	01.5	2.54237268	2.41345060	0.12892209	2.13200240	2.69489879
61	5	02.0	2.52149470	2.34051177	0.18098293	2.06037609	2.62064744
62	5	02.5	2.43789463	2.27181982	0.16607481	1.99221686	2.55142278
63	5	03.0	2.38674211	2.20737475	0.17936736	1.92778108	2.48696842
64	5	03.5	2.32875016	2.14717657	0.18157360	1.86728112	2.42707201
65	5	04.0	2.26717173	2.09122526	0.17594647	1.81088199	2.37156853
66	5	04.5	2.19539641	2.03952083	0.15587558	1.75870009	2.32034158
67	5	05.0	2.14753580	1.99206329	0.15547251	1.71080318	2.27332339
68	5	05.5	2.08571211	1.94885262	0.13685949	1.66721072	2.23049452
69	5	06.0	2.04139269	1.90988884	0.13150385	1.62789426	2.19188342
70	5	10.0	1.93861069	1.75106625	0.18754442	1.44883929	2.05329323

* OBSERVATION WAS NOT USED IN THIS ANALYSIS

*Typical data for only one roll.

APPENDIX D

CALCULATED MOISTURE CONTENT (wb) FROM ORIGINAL DATA FOR SEASON 1 AND SEASON 2

OBS*	TREAT	TIME	DRMT	MCWB
1	11121	0.0	37.3	69.2
2	11121	0.5	37.3	58.8
3	11121	1.0	37.3	50.7
4	11121	1.5	37.3	43.8
5	11121	2.0	37.3	37.8
6	11121	2.5	37.3	35.2
7	11121	3.0	37.3	28.8
8	11121	3.5	37.3	24.0
9	11121	4.0	37.3	20.2
10	11121	4.5	37.3	17.2
11	11121	5.0	37.3	14.6
12	11121	5.5	37.3	12.0
13	11121	6.0	37.3	10.7
14	11121	10.0	37.3	3.9
15	11112	0.0	38.0	68.9
16	11112	0.5	38.0	59.9
17	11112	1.0	38.0	53.9
18	11112	1.5	38.0	48.4
19	11112	2.0	38.0	42.9
20	11112	2.5	38.0	38.6
21	11112	3.0	38.0	34.5
22	11112	3.5	38.0	30.5
23	11112	4.0	38.0	26.9
24	11112	4.5	38.0	23.7
25	11112	5.0	38.0	20.7
26	11112	5.5	38.0	17.7
27	11112	6.0	38.0	15.6
28	11112	10.0	38.0	7.0
29	11123	0.0	37.1	70.6
30	11123	0.5	37.1	64.3
31	11123	1.0	37.1	57.9
32	11123	1.5	37.1	53.2
33	11123	2.0	37.1	48.5
34	11123	2.5	37.1	43.8
35	11123	3.0	37.1	39.2
36	11123	3.5	37.1	34.5
37	11123	4.0	37.1	30.7
38	11123	4.5	37.1	27.2
39	11123	5.0	37.1	24.4
40	11123	5.5	37.1	20.8
41	11123	6.0	37.1	18.6
42	11123	10.0	37.1	9.0
43	11122	0.0	36.5	70.7
44	11122	0.5	36.5	63.1
45	11122	1.0	36.5	59.0
46	11122	1.5	36.5	54.2
47	11122	2.0	36.5	49.4
48	11122	2.5	36.5	45.8
49	11122	3.0	36.5	41.0
50	11122	3.5	36.5	37.8
51	11122	4.0	36.5	34.5
52	11122	4.5	36.5	30.9
53	11122	5.0	36.5	27.3
54	11122	5.5	36.5	24.7
55	11122	6.0	36.5	22.5
56	11122	10.0	36.5	10.4
57	11113	0.0	37.0	70.4
58	11113	0.5	37.0	62.4
59	11113	1.0	37.0	53.0
60	11113	1.5	37.0	52.0
61	11113	2.0	37.0	45.4
62	11113	2.5	37.0	42.4
63	11113	3.0	37.0	38.4
64	11113	3.5	37.0	34.4
65	11113	4.0	37.0	30.8
66	11113	4.5	37.0	27.2
67	11113	5.0	37.0	24.0
68	11113	5.5	37.0	22.0
69	11113	6.0	37.0	19.2
70	11113	10.0	37.0	3.0
71	11111	0.0	37.0	63.8
72	11111	0.5	37.0	57.0
73	11111	1.0	37.0	51.1
74	11111	1.5	37.0	44.7
75	11111	2.0	37.0	40.1
76	11111	2.5	37.0	35.4
77	11111	3.0	37.0	31.2
78	11111	3.5	37.0	27.0
79	11111	4.0	37.0	22.8
80	11111	4.5	37.0	19.8
81	11111	5.0	37.0	17.7
82	11111	5.5	37.0	15.2
83	11111	6.0	37.0	13.5
84	11111	10.0	37.0	5.9
85	11323	0.0	39.0	68.5
86	11323	0.5	39.0	57.3
87	11323	1.0	39.0	48.8
88	11323	1.5	39.0	41.5
89	11323	2.0	39.0	35.3
90	11323	2.5	39.0	31.5
91	11323	3.0	39.0	27.0
92	11323	3.5	39.0	23.0
93	11323	4.0	39.0	19.8
94	11323	4.5	39.0	15.1
95	11323	5.0	39.0	13.3
96	11323	5.5	39.0	11.7
97	11323	6.0	39.0	9.3
98	11323	10.0	39.0	2.0
99	11313	0.0	38.9	63.6
100	11313	0.5	38.9	54.5
101	11313	1.0	38.9	50.9
102	11313	1.5	38.9	44.4
103	11313	2.0	38.9	38.4
104	11313	2.5	38.9	33.1
105	11313	3.0	38.9	29.1
106	11313	3.5	38.9	25.1
107	11313	4.0	38.9	21.9
108	11313	4.5	38.9	19.4
109	11313	5.0	38.9	17.0
110	11313	5.5	38.9	13.4
111	11313	6.0	38.9	12.2
112	11313	10.0	38.9	3.3
113	11312	0.0	39.0	69.4
114	11312	0.5	39.0	62.7
115	11312	1.0	39.0	54.9
116	11312	1.5	39.0	51.0
117	11312	2.0	39.0	45.5
118	11312	2.5	39.0	40.8
119	11312	3.0	39.0	36.9
120	11312	3.5	39.0	33.3
121	11312	4.0	39.0	30.2
122	11312	4.5	39.0	27.5
123	11312	5.0	39.0	23.5
124	11312	5.5	39.0	20.0
125	11312	6.0	39.0	17.6
126	11312	10.0	39.0	4.7
127	11311	0.0	38.1	69.8
128	11311	0.5	38.1	64.4
129	11311	1.0	38.1	59.1
130	11311	1.5	38.1	52.6
131	11311	2.0	38.1	48.1
132	11311	2.5	38.1	44.0
133	11311	3.0	38.1	39.9
134	11311	3.5	38.1	35.3
135	11311	4.0	38.1	32.5
136	11311	4.5	38.1	30.1
137	11311	5.0	38.1	27.7
138	11311	5.5	38.1	23.6
139	11311	6.0	38.1	20.3
140	11311	10.0	38.1	5.6
141	11321	0.0	38.9	69.2
142	11321	0.5	38.9	60.9
143	11321	1.0	38.9	53.8
144	11321	1.5	38.9	47.5
145	11321	2.0	38.9	41.2
146	11321	2.5	38.9	36.4
147	11321	3.0	38.9	32.5
148	11321	3.5	38.9	28.5
149	11321	4.0	38.9	24.6
150	11321	4.5	38.9	20.6
151	11321	5.0	38.9	15.7
152	11321	5.5	38.9	13.1
153	11321	6.0	38.9	12.3
154	11321	10.0	38.9	2.8
155	11322	0.0	38.0	70.1
156	11322	0.5	38.0	61.3
157	11322	1.0	38.0	54.0
158	11322	1.5	38.0	48.4
159	11322	2.0	38.0	42.4
160	11322	2.5	38.0	37.2
161	11322	3.0	38.0	32.8
162	11322	3.5	38.0	29.3
163	11322	4.0	38.0	25.5
164	11322	4.5	38.0	22.3
165	11322	5.0	38.0	19.1
166	11322	5.5	38.0	16.3
167	11322	6.0	38.0	13.5
168	11322	10.0	38.0	5.0
169	11223	0.0	28.8	77.1
170	11223	0.5	28.8	72.8
171	11223	1.0	28.8	68.4
172	11223	1.5	28.8	54.1
173	11223	2.0	28.8	48.2
174	11223	2.5	28.8	43.8
175	11223	3.0	28.8	39.4
176	11223	3.5	28.8	36.3
177	11223	4.0	28.8	33.5
178	11223	4.5	28.8	28.3
179	11223	5.0	28.8	25.6
180	11223	5.5	28.8	24.4
181	11223	6.0	28.8	23.6
182	11223	10.0	28.8	5.3
183	11213	0.0	28.8	76.6
184	11213	0.5	28.8	67.6
185	11213	1.0	28.8	60.3
186	11213	1.5	28.8	55.0
187	11213	2.0	28.8	48.9
188	11213	2.5	28.8	42.8
189	11213	3.0	28.8	38.8
190	11213	3.5	28.8	34.7
191	11213	4.0	28.8	30.7
192	11213	4.5	28.8	25.4
193	11213	5.0	28.8	21.7
194	11213	5.5	28.8	18.5
195	11213	6.0	28.8	14.6
196	11213	10.0	28.8	5.4
197	11221	0.0	28.9	76.9
198	11221	0.5	28.9	68.5
199	11221	1.0	28.9	60.9
200	11221	1.5	28.9	56.1
201	11221	2.0	28.9	48.9
202	11221	2.5	28.9	44.1
203	11221	3.0	28.9	38.5
204	11221	3.5	28.9	34.5
205	11221	4.0	28.9	30.5
206	11221	4.5	28.9	27.3
207	11221	5.0	28.9	23.7
208	11221	5.5	28.9	20.9
209	11221	6.0	28.9	16.9
210	11221	10.0	28.9	4.9
211	11211	0.0	29.5	77.0
212	11211	0.5	29.5	70.7
213	11211	1.0	29.5	64.5
214	11211	1.5	29.5	59.0
215	11211	2.0	29.5	55.1
216	11211	2.5	29.5	51.2
217	11211	3.0	29.5	46.5
218	11211	3.5	29.5	41.8
219	11211	4.0	29.5	38.3
220	11211	4.5	29.5	34.4
221	11211	5.0	29.5	30.9
222	11211	5.5	29.5	27.7
223	11211	6.0	29.5	23.8
224	11211	10.0	29.5	8.2

*See page 117 for identification of headings.

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
225	11212	0.0	33.1	74.2	281	11022	0.0	24.1	81.0	337	11412	0.0	22.9	82.1	393	11423	0.0	23.0	82.0
226	11212	0.5	33.1	65.7	282	11022	0.5	24.1	73.7	338	11412	0.5	22.9	70.2	394	11423	0.5	23.0	72.3
227	11212	1.0	33.1	59.1	283	11022	1.0	24.1	68.0	339	11412	1.0	22.9	61.9	395	11423	1.0	23.0	62.5
228	11212	1.5	33.1	52.5	284	11022	1.5	24.1	60.7	340	11412	1.5	22.9	54.0	396	11423	1.5	23.0	54.7
229	11212	2.0	33.1	47.4	285	11022	2.0	24.1	55.7	341	11412	2.0	22.9	46.4	397	11423	2.0	23.0	48.0
230	11212	2.5	33.1	43.5	286	11022	2.5	24.1	51.8	342	11412	2.5	22.9	40.1	398	11423	2.5	23.0	43.0
231	11212	3.0	33.1	38.8	287	11022	3.0	24.1	45.5	343	11412	3.0	22.9	34.5	399	11423	3.0	23.0	36.7
232	11212	3.5	33.1	33.8	288	11022	3.5	24.1	41.7	344	11412	3.5	22.9	29.8	400	11423	3.5	23.0	30.9
233	11212	4.0	33.1	30.3	289	11022	4.0	24.1	37.2	345	11412	4.0	22.9	25.4	401	11423	4.0	23.0	27.3
234	11212	4.5	33.1	25.2	290	11022	4.5	24.1	33.1	346	11412	4.5	22.9	21.4	402	11423	4.5	23.0	23.4
235	11212	5.0	33.1	21.3	291	11022	5.0	24.1	29.5	347	11412	5.0	22.9	18.7	403	11423	5.0	23.0	19.1
236	11212	5.5	33.1	20.2	292	11022	5.5	24.1	27.5	348	11412	5.5	22.9	15.1	404	11423	5.5	23.0	15.6
237	11212	6.0	33.1	16.3	293	11022	6.0	24.1	24.3	349	11412	6.0	22.9	13.5	405	11423	6.0	23.0	12.1
238	11212	10.0	33.1	5.8	294	11022	10.0	24.1	9.0	350	11412	10.0	22.9	5.0	406	11423	10.0	23.0	6.0
239	11222	0.0	30.0	75.8	295	11023	0.0	23.5	81.5	351	11411	0.0	22.9	82.1	407	11421	0.0	23.3	81.8
240	11222	0.5	30.0	64.5	296	11023	0.5	23.5	75.4	352	11411	0.5	22.9	74.3	408	11421	0.5	23.3	67.6
241	11222	1.0	30.0	56.0	297	11023	1.0	23.5	69.3	353	11411	1.0	22.9	66.5	409	11421	1.0	23.3	42.8
242	11222	1.5	30.0	48.4	298	11023	1.5	23.5	64.6	354	11411	1.5	22.9	58.7	410	11421	1.5	23.3	50.6
243	11222	2.0	30.0	40.7	299	11023	2.0	23.5	59.8	355	11411	2.0	22.9	52.8	411	11421	2.0	23.3	43.8
244	11222	2.5	30.0	36.3	300	11023	2.5	23.5	55.1	356	11411	2.5	22.9	47.0	412	11421	2.5	23.3	37.0
245	11222	3.0	30.0	30.2	301	11023	3.0	23.5	50.4	357	11411	3.0	22.9	43.0	413	11421	3.0	23.3	31.6
246	11222	3.5	30.0	25.4	302	11023	3.5	23.5	45.1	358	11411	3.5	22.9	38.0	414	11421	3.5	23.3	26.9
247	11222	4.0	30.0	21.4	303	11023	4.0	23.5	41.7	359	11411	4.0	22.9	32.5	415	11421	4.0	23.3	22.5
248	11222	4.5	30.0	18.1	304	11023	4.5	23.5	33.2	360	11411	4.5	22.9	28.6	416	11421	4.5	23.3	19.4
249	11222	5.0	30.0	16.1	305	11023	5.0	23.5	35.4	361	11411	5.0	22.9	24.7	417	11421	5.0	23.3	17.3
250	11222	5.5	30.0	12.5	306	11023	5.5	23.5	33.1	362	11411	5.5	22.9	22.3	418	11421	5.5	23.3	14.7
251	11222	6.0	30.0	11.3	307	11023	6.0	23.5	29.1	363	11411	6.0	22.9	19.6	419	11421	6.0	23.3	10.9
252	11222	10.0	30.0	4.0	308	11023	10.0	23.5	13.4	364	11411	10.0	22.9	9.1	420	11421	10.0	23.3	4.0
253	11012	0.0	21.5	82.7	309	11021	0.0	27.0	73.2	365	11413	0.0	24.1	81.2	421	12322	0.0	29.0	76.4
254	11012	0.5	21.5	73.9	310	11021	0.5	27.0	69.0	366	11413	0.5	24.1	73.4	422	12322	0.5	29.0	65.4
255	11012	1.0	21.5	64.5	311	11021	1.0	27.0	61.3	367	11413	1.0	24.1	65.5	423	12322	1.0	29.0	55.3
256	11012	1.5	21.5	57.5	312	11021	1.5	27.0	54.8	368	11413	1.5	24.1	57.7	424	12322	1.5	29.0	47.2
257	11012	2.0	21.5	49.1	313	11021	2.0	27.0	48.8	369	11413	2.0	24.1	53.0	425	12322	2.0	29.0	40.7
258	11012	2.5	21.5	44.9	314	11021	2.5	27.0	42.7	370	11413	2.5	24.1	46.8	426	12322	2.5	29.0	33.7
259	11012	3.0	21.5	38.6	315	11021	3.0	27.0	38.7	371	11413	3.0	24.1	42.1	427	12322	3.0	29.0	28.5
260	11012	3.5	21.5	33.1	316	11021	3.5	27.0	33.9	372	11413	3.5	24.1	38.2	428	12322	3.5	29.0	22.0
261	11012	4.0	21.5	28.1	317	11021	4.0	27.0	23.8	373	11413	4.0	24.1	33.9	429	12322	4.0	29.0	17.9
262	11012	4.5	21.5	24.8	318	11021	4.5	27.0	25.0	374	11413	4.5	24.1	30.0	430	12322	4.5	29.0	15.0
263	11012	5.0	21.5	21.0	319	11021	5.0	27.0	22.6	375	11413	5.0	24.1	26.5	431	12322	5.0	29.0	13.0
264	11012	5.5	21.5	19.8	320	11021	5.5	27.0	19.0	376	11413	5.5	24.1	22.6	432	12322	5.5	29.0	9.8
265	11012	6.0	21.5	15.6	321	11021	6.0	27.0	15.5	377	11413	6.0	24.1	18.7	433	12322	6.0	29.0	8.9
266	11012	10.0	21.5	7.2	322	11021	10.0	27.0	5.0	378	11413	10.0	24.1	8.9	434	12322	10.0	29.0	2.0
267	11013	0.0	22.9	81.7	323	11011	0.0	25.5	79.3	379	11422	0.0	24.0	81.3	435	12311	0.0	25.2	79.5
268	11013	0.5	22.9	72.9	324	11011	0.5	25.5	71.1	380	11422	0.5	24.0	74.6	436	12311	0.5	25.2	69.3
269	11013	1.0	22.9	64.9	325	11011	1.0	25.5	63.0	381	11422	1.0	24.0	66.8	437	12311	1.0	25.2	61.2
270	11013	1.5	22.9	57.7	326	11011	1.5	25.5	55.9	382	11422	1.5	24.0	60.5	438	12311	1.5	25.2	53.1
271	11013	2.0	22.9	51.7	327	11011	2.0	25.5	50.8	383	11422	2.0	24.0	53.9	439	12311	2.0	25.2	48.2
272	11013	2.5	22.9	45.7	328	11011	2.5	25.5	45.9	384	11422	2.5	24.0	48.8	440	12311	2.5	25.2	43.1
273	11013	3.0	22.9	40.9	329	11011	3.0	25.5	40.2	385	11422	3.0	24.0	42.2	441	12311	3.0	25.2	36.8
274	11013	3.5	22.9	35.3	330	11011	3.5	25.5	34.6	386	11422	3.5	24.0	38.3	442	12311	3.5	25.2	32.8
275	11013	4.0	22.9	29.7	331	11011	4.0	25.5	30.5	387	11422	4.0	24.0	33.6	443	12311	4.0	25.2	27.9
276	11013	4.5	22.9	25.7	332	11011	4.5	25.5	26.4	388	11422	4.5	24.0	28.5	444	12311	4.5	25.2	24.6
277	11013	5.0	22.9	23.3	333	11011	5.0	25.5	22.4	389	11422	5.0	24.0	24.6	445	12311	5.0	25.2	20.6
278	11013	5.5	22.9	21.7	334	11011	5.5	25.5	13.7	390	11422	5.5	24.0	19.9	446	12311	5.5	25.2	17.7
279	11013	6.0	22.9	17.7	335	11011	6.0	25.5	17.1	391	11422	6.0	24.0	18.8	447	12311	6.0	25.2	16.5
280	11013	10.0	22.9	9.7	336	11011	10.0	25.5	5.1	392	11422	10.0	24.0	5.9	448	12311	10.0	25.2	6.3

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
449	12321	0.0	26.1	79.1	505	12211	0.0	26.5	77.9	561	12212	0.0	27.7	77.5	617	12422	0.0	27.7	77.8
450	12321	0.5	26.1	69.9	506	12211	0.5	26.5	65.7	562	12212	0.5	27.7	65.3	618	12422	0.5	27.7	65.8
451	12321	1.0	26.1	61.9	507	12211	1.0	26.5	57.1	563	12212	1.0	27.7	55.9	619	12422	1.0	27.7	57.0
452	12321	1.5	26.1	55.1	508	12211	1.5	26.5	43.8	564	12212	1.5	27.7	49.0	620	12422	1.5	27.7	48.6
453	12321	2.0	26.1	48.3	509	12211	2.0	26.5	42.1	565	12212	2.0	27.7	41.7	621	12422	2.0	27.7	41.8
454	12321	2.5	26.1	47.1	510	12211	2.5	26.5	35.3	566	12212	2.5	27.7	36.4	622	12422	2.5	27.7	33.8
455	12321	3.0	26.1	37.9	511	12211	3.0	26.5	28.8	567	12212	3.0	27.7	30.3	623	12422	3.0	27.7	28.6
456	12321	3.5	26.1	32.7	512	12211	3.5	26.5	23.8	568	12212	3.5	27.7	25.4	624	12422	3.5	27.7	23.0
457	12321	4.0	26.1	27.5	513	12211	4.0	26.5	19.6	569	12212	4.0	27.7	21.4	625	12422	4.0	27.7	18.2
458	12321	4.5	26.1	23.9	514	12211	4.5	26.5	15.4	570	12212	4.5	27.7	18.1	626	12422	4.5	27.7	15.0
459	12321	5.0	26.1	20.3	515	12211	5.0	26.5	12.5	571	12212	5.0	27.7	16.5	627	12422	5.0	27.7	13.0
460	12321	5.5	26.1	17.9	516	12211	5.5	26.5	11.3	572	12212	5.5	27.7	13.7	628	12422	5.5	27.7	10.6
461	12321	6.0	26.1	15.1	517	12211	6.0	26.5	9.2	573	12212	6.0	27.7	12.8	629	12422	6.0	27.7	9.6
462	12321	10.0	26.1	3.5	518	12211	10.0	26.5	3.3	574	12212	10.0	27.7	5.1	630	12422	10.0	27.7	3.0
463	12323	0.0	25.5	79.3	519	12221	0.0	26.9	77.6	575	12213	0.0	26.8	78.0	631	12413	0.0	25.3	80.1
464	12323	0.5	25.5	68.7	520	12221	0.5	26.9	68.0	576	12213	0.5	26.8	67.4	632	12413	0.5	25.3	72.6
465	12323	1.0	25.5	59.8	521	12221	1.0	26.9	60.1	577	12213	1.0	26.8	59.6	633	12413	1.0	25.3	65.5
466	12323	1.5	25.5	52.0	522	12221	1.5	26.9	52.6	578	12213	1.5	26.8	52.2	634	12413	1.5	25.3	58.8
467	12323	2.0	25.5	45.9	523	12221	2.0	26.9	45.5	579	12213	2.0	26.8	45.2	635	12413	2.0	25.3	54.5
468	12323	2.5	25.5	38.6	524	12221	2.5	26.9	40.1	580	12213	2.5	26.8	39.9	636	12413	2.5	25.3	48.2
469	12323	3.0	25.5	34.1	525	12221	3.0	26.9	34.7	581	12213	3.0	26.8	34.6	637	12413	3.0	25.3	44.6
470	12323	3.5	25.5	28.5	526	12221	3.5	26.9	28.0	582	12213	3.5	26.8	29.3	638	12413	3.5	25.3	40.7
471	12323	4.0	25.5	22.8	527	12221	4.0	26.9	23.4	583	12213	4.0	26.8	24.3	639	12413	4.0	25.3	36.8
472	12323	4.5	25.5	19.5	528	12221	4.5	26.9	19.3	584	12213	4.5	26.8	20.7	640	12413	4.5	25.3	30.5
473	12323	5.0	25.5	16.3	529	12221	5.0	26.9	15.9	585	12213	5.0	26.8	16.1	641	12413	5.0	25.3	28.5
474	12323	5.5	25.5	13.8	530	12221	5.5	26.9	14.3	586	12213	5.5	26.8	15.3	642	12413	5.5	25.3	23.0
475	12323	6.0	25.5	10.6	531	12221	6.0	26.9	10.9	587	12213	6.0	26.8	14.1	643	12413	6.0	25.3	19.8
476	12323	10.0	25.5	3.3	532	12221	10.0	26.9	3.4	588	12213	10.0	26.8	6.7	644	12413	10.0	25.3	7.2
477	12312	0.0	25.6	79.3	533	12222	0.0	27.0	77.7	589	12423	0.0	25.5	79.1	645	12412	0.0	27.4	77.4
478	12312	0.5	25.6	68.3	534	12222	0.5	27.0	68.6	590	12423	0.5	25.5	65.6	646	12412	0.5	27.4	65.4
479	12312	1.0	25.6	59.4	535	12222	1.0	27.0	61.2	591	12423	1.0	25.5	53.3	647	12412	1.0	27.4	56.7
480	12312	1.5	25.6	52.6	536	12222	1.5	27.0	54.5	592	12423	1.5	25.5	41.8	648	12412	1.5	27.4	48.4
481	12312	2.0	25.6	46.5	537	12222	2.0	27.0	47.9	593	12423	2.0	25.5	36.5	649	12412	2.0	27.4	42.2
482	12312	2.5	25.6	40.0	538	12222	2.5	27.0	42.6	594	12423	2.5	25.5	28.7	650	12412	2.5	27.4	35.2
483	12312	3.0	25.6	35.5	539	12222	3.0	27.0	36.4	595	12423	3.0	25.5	24.2	651	12412	3.0	27.4	31.1
484	12312	3.5	25.6	31.1	540	12222	3.5	27.0	31.4	596	12423	3.5	25.5	20.1	652	12412	3.5	27.4	25.7
485	12312	4.0	25.6	27.0	541	12222	4.0	27.0	25.9	597	12423	4.0	25.5	15.0	653	12412	4.0	27.4	20.3
486	12312	4.5	25.6	23.8	542	12222	4.5	27.0	22.7	598	12423	4.5	25.5	13.1	654	12412	4.5	27.4	18.7
487	12312	5.0	25.6	22.2	543	12222	5.0	27.0	19.0	599	12423	5.0	25.5	12.3	655	12412	5.0	27.4	15.4
488	12312	5.5	25.6	19.8	544	12222	5.5	27.0	15.7	600	12423	5.5	25.5	10.7	656	12412	5.5	27.4	13.3
489	12312	6.0	25.6	16.9	545	12222	6.0	27.0	13.6	601	12423	6.0	25.5	9.0	657	12412	6.0	27.4	11.2
490	12312	10.0	25.6	9.2	546	12222	10.0	27.0	4.5	602	12423	10.0	25.5	4.1	658	12412	10.0	27.4	3.4
491	12313	0.0	26.1	78.8	547	12223	0.0	27.2	77.9	603	12421	0.0	25.7	79.2	659	12411	0.0	26.4	78.5
492	12313	0.5	26.1	69.8	548	12223	0.5	27.2	70.2	604	12421	0.5	25.7	67.9	660	12411	0.5	26.4	63.9
493	12313	1.0	26.1	61.7	549	12223	1.0	27.2	62.8	605	12421	1.0	25.7	56.9	661	12411	1.0	26.4	52.5
494	12313	1.5	26.1	54.4	550	12223	1.5	27.2	58.0	606	12421	1.5	25.7	48.0	662	12411	1.5	26.4	44.0
495	12313	2.0	26.1	47.5	551	12223	2.0	27.2	51.5	607	12421	2.0	25.7	43.6	663	12411	2.0	26.4	37.5
496	12313	2.5	26.1	42.2	552	12223	2.5	27.2	45.6	608	12421	2.5	25.7	33.4	664	12411	2.5	26.4	31.4
497	12313	3.0	26.1	36.1	553	12223	3.0	27.2	42.5	609	12421	3.0	25.7	27.8	665	12411	3.0	26.4	26.5
498	12313	3.5	26.1	31.2	554	12223	3.5	27.2	37.2	610	12421	3.5	25.7	23.3	666	12411	3.5	26.4	22.4
499	12313	4.0	26.1	26.7	555	12223	4.0	27.2	32.4	611	12421	4.0	25.7	18.9	667	12411	4.0	26.4	18.4
500	12313	4.5	26.1	22.7	556	12223	4.5	27.2	28.3	612	12421	4.5	25.7	15.6	668	12411	4.5	26.4	15.1
501	12313	5.0	26.1	19.0	557	12223	5.0	27.2	24.6	613	12421	5.0	25.7	12.4	669	12411	5.0	26.4	9.8
502	12313	5.5	26.1	16.2	558	12223	5.5	27.2	21.8	614	12421	5.5	25.7	11.6	670	12411	5.5	26.4	7.8
503	12313	6.0	26.1	13.7	559	12223	6.0	27.2	13.1	615	12421	6.0	25.7	9.6	671	12411	6.0	26.4	6.2
504	12313	10.0	26.1	5.6	560	12223	10.0	27.2	5.9	616	12421	10.0	25.7	3.5	672	12411	10.0	26.4	3.7

OBS	TREAT	TIME	DRMT	MCWB
673	12113	0.0	31.1	75.1
674	12113	0.5	31.1	66.3
675	12113	1.0	31.1	58.7
676	12113	1.5	31.1	51.1
677	12113	2.0	31.1	44.7
678	12113	2.5	31.1	39.1
679	12113	3.0	31.1	33.5
680	12113	3.5	31.1	27.9
681	12113	4.0	31.1	23.5
682	12113	4.5	31.1	19.1
683	12113	5.0	31.1	16.3
684	12113	5.5	31.1	13.9
685	12113	6.0	31.1	11.1
686	12113	10.0	31.1	4.7
687	12122	0.0	31.3	75.0
688	12122	0.5	31.3	67.0
689	12122	1.0	31.3	59.0
690	12122	1.5	31.3	52.2
691	12122	2.0	31.3	47.0
692	12122	2.5	31.3	41.4
693	12122	3.0	31.3	36.2
694	12122	3.5	31.3	31.0
695	12122	4.0	31.3	27.0
696	12122	4.5	31.3	23.0
697	12122	5.0	31.3	19.4
698	12122	5.5	31.3	17.0
699	12122	6.0	31.3	15.0
700	12122	10.0	31.3	5.8
701	12112	0.0	30.8	75.7
702	12112	0.5	30.8	69.3
703	12112	1.0	30.8	62.2
704	12112	1.5	30.8	57.1
705	12112	2.0	30.8	50.8
706	12112	2.5	30.8	46.4
707	12112	3.0	30.8	42.5
708	12112	3.5	30.8	37.7
709	12112	4.0	30.8	33.4
710	12112	4.5	30.8	29.4
711	12112	5.0	30.8	25.8
712	12112	5.5	30.8	22.7
713	12112	6.0	30.8	18.7
714	12112	10.0	30.8	6.5
715	12111	0.0	29.3	76.9
716	12111	0.5	29.3	71.0
717	12111	1.0	29.3	63.9
718	12111	1.5	29.3	59.2
719	12111	2.0	29.3	54.5
720	12111	2.5	29.3	49.4
721	12111	3.0	29.3	44.6
722	12111	3.5	29.3	39.5
723	12111	4.0	29.3	35.6
724	12111	4.5	29.3	31.7
725	12111	5.0	29.3	27.7
726	12111	5.5	29.3	23.8
727	12111	6.0	29.3	20.6
728	12111	10.0	29.3	5.3

OBS	TREAT	TIME	DRMT	MCWB
729	12123	0.0	31.1	75.3
730	12123	0.5	31.1	65.6
731	12123	1.0	31.1	58.7
732	12123	1.5	31.1	51.5
733	12123	2.0	31.1	45.4
734	12123	2.5	31.1	39.6
735	12123	3.0	31.1	34.8
736	12123	3.5	31.1	30.9
737	12123	4.0	31.1	25.9
738	12123	4.5	31.1	22.9
739	12123	5.0	31.1	19.8
740	12123	5.5	31.1	15.2
741	12123	6.0	31.1	11.0
742	12123	10.0	31.1	5.1
743	12121	0.0	31.6	74.5
744	12121	0.5	31.6	62.8
745	12121	1.0	31.6	51.5
746	12121	1.5	31.6	45.1
747	12121	2.0	31.6	33.6
748	12121	2.5	31.6	31.4
749	12121	3.0	31.6	27.3
750	12121	3.5	31.6	22.5
751	12121	4.0	31.6	18.9
752	12121	4.5	31.6	15.2
753	12121	5.0	31.6	12.4
754	12121	5.5	31.6	8.8
755	12121	6.0	31.6	7.2
756	12121	10.0	31.6	3.1
757	12022	0.0	29.9	75.1
758	12022	0.5	29.9	64.1
759	12022	1.0	29.9	54.5
760	12022	1.5	29.9	45.5
761	12022	2.0	29.9	40.1
762	12022	2.5	29.9	32.9
763	12022	3.0	29.9	28.1
764	12022	3.5	29.9	24.1
765	12022	4.0	29.9	19.7
766	12022	4.5	29.9	15.1
767	12022	5.0	29.9	14.1
768	12022	5.5	29.9	12.1
769	12022	6.0	29.9	9.7
770	12022	10.0	29.9	4.1
771	12011	0.0	30.9	74.9
772	12011	0.5	30.9	65.4
773	12011	1.0	30.9	58.3
774	12011	1.5	30.9	52.0
775	12011	2.0	30.9	45.9
776	12011	2.5	30.9	39.7
777	12011	3.0	30.9	35.5
778	12011	3.5	30.9	31.4
779	12011	4.0	30.9	25.7
780	12011	4.5	30.9	23.1
781	12011	5.0	30.9	18.9
782	12011	5.5	30.9	16.8
783	12011	6.0	30.9	14.8
784	12011	10.0	30.9	5.2

OBS	TREAT	TIME	DRMT	MCWB
785	12013	0.0	30.1	75.7
786	12013	0.5	30.1	68.1
787	12013	1.0	30.1	60.0
788	12013	1.5	30.1	54.8
789	12013	2.0	30.1	48.7
790	12013	2.5	30.1	43.9
791	12013	3.0	30.1	39.0
792	12013	3.5	30.1	34.2
793	12013	4.0	30.1	29.4
794	12013	4.5	30.1	25.7
795	12013	5.0	30.1	23.3
796	12013	5.5	30.1	19.7
797	12013	6.0	30.1	17.3
798	12013	10.0	30.1	6.4
799	12012	0.0	29.7	76.6
800	12012	0.5	29.7	69.1
801	12012	1.0	29.7	63.2
802	12012	1.5	29.7	56.9
803	12012	2.0	29.7	52.6
804	12012	2.5	29.7	45.3
805	12012	3.0	29.7	41.2
806	12012	3.5	29.7	37.2
807	12012	4.0	29.7	33.3
808	12012	4.5	29.7	29.4
809	12012	5.0	29.7	25.4
810	12012	5.5	29.7	21.9
811	12012	6.0	29.7	18.0
812	12012	10.0	29.7	7.3
813	12023	0.0	29.8	76.3
814	12023	0.5	29.8	68.4
815	12023	1.0	29.8	60.5
816	12023	1.5	29.8	54.9
817	12023	2.0	29.8	48.6
818	12023	2.5	29.8	44.2
819	12023	3.0	29.8	38.3
820	12023	3.5	29.8	33.9
821	12023	4.0	29.8	29.9
822	12023	4.5	29.8	26.0
823	12023	5.0	29.8	24.4
824	12023	5.5	29.8	20.8
825	12023	6.0	29.8	17.6
826	12023	10.0	29.8	5.5
827	12021	0.0	28.8	76.2
828	12021	0.5	28.8	66.3
829	12021	1.0	28.8	56.8
830	12021	1.5	28.8	49.8
831	12021	2.0	28.8	42.7
832	12021	2.5	28.8	36.1
833	12021	3.0	28.8	30.7
834	12021	3.5	28.8	26.6
835	12021	4.0	28.8	22.1
836	12021	4.5	28.8	18.3
837	12021	5.0	28.8	16.7
838	12021	5.5	28.8	13.8
839	12021	6.0	28.8	11.3
840	12021	10.0	28.8	2.6

OBS	TREAT	TIME	DRMT	MCWB
841	21012	0.0	36.0	70.7
842	21012	0.5	36.0	58.9
843	21012	1.0	36.0	46.3
844	21012	1.5	36.0	45.1
845	21012	2.0	36.0	30.9
846	21012	2.5	36.0	24.8
847	21012	3.0	36.0	20.7
848	21012	3.5	36.0	17.9
849	21012	4.0	36.0	15.9
850	21012	4.5	36.0	13.4
851	21012	5.0	36.0	12.6
852	21012	5.5	36.0	11.4
853	21012	6.0	36.0	8.5
854	21012	10.0	36.0	4.5
855	21011	0.0	34.6	72.1
856	21011	0.5	34.6	62.2
857	21011	1.0	34.6	52.3
858	21011	1.5	34.6	45.6
859	21011	2.0	34.6	37.8
860	21011	2.5	34.6	33.2
861	21011	3.0	34.6	28.3
862	21011	3.5	34.6	47.9
863	21011	4.0	34.6	20.0
864	21011	4.5	34.6	16.7
865	21011	5.0	34.6	15.5
866	21011	5.5	34.6	12.6
867	21011	6.0	34.6	11.3
868	21011	10.0	34.6	4.3
869	21013	0.0	37.3	69.9
870	21013	0.5	37.3	61.9
871	21013	1.0	37.3	53.8
872	21013	1.5	37.3	46.5
873	21013	2.0	37.3	41.3
874	21013	2.5	37.3	35.6
875	21013	3.0	37.3	31.2
876	21013	3.5	37.3	27.2
877	21013	4.0	37.3	24.4
878	21013	4.5	37.3	21.5
879	21013	5.0	37.3	19.5
880	21013	5.5	37.3	17.5
881	21013	6.0	37.3	14.3
882	21013	10.0	37.3	6.2
883	21022	0.0	35.7	71.7
884	21022	0.5	35.7	63.3
885	21022	1.0	35.7	55.0
886	21022	1.5	35.7	49.0
887	21022	2.0	35.7	42.3
888	21022	2.5	35.7	37.5
889	21022	3.0	35.7	32.0
890	21022	3.5	35.7	27.6
891	21022	4.0	35.7	23.7
892	21022	4.5	35.7	20.9
893	21022	5.0	35.7	18.5
894	21022	5.5	35.7	15.3
895	21022	6.0	35.7	13.3
896	21022	10.0	35.7	7.0

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
897	21023	0.0	34.6	72.1	953	21421	0.0	31.0	75.8	1009	21123	0.0	32.9	73.3	1065	21111	0.0	33.2	74.1
898	21023	0.5	34.6	60.4	954	21421	0.5	31.0	74.3	1010	21123	0.5	32.9	61.2	1066	21111	0.5	33.2	65.7
899	21023	1.0	34.6	49.9	955	21421	1.0	31.0	65.9	1011	21123	1.0	32.9	51.7	1067	21111	1.0	33.2	55.9
900	21023	1.5	34.6	42.7	956	21421	1.5	31.0	57.3	1012	21123	1.5	32.9	40.9	1068	21111	1.5	33.2	48.7
901	21023	2.0	34.6	35.8	957	21421	2.0	31.0	50.7	1013	21123	2.0	32.9	34.2	1069	21111	2.0	33.2	42.8
902	21023	2.5	34.6	31.8	958	21421	2.5	31.0	44.5	1014	21123	2.5	32.9	28.0	1070	21111	2.5	33.2	37.3
903	21023	3.0	34.6	27.3	959	21421	3.0	31.0	33.6	1015	21123	3.0	32.9	21.4	1071	21111	3.0	33.2	30.9
904	21023	3.5	34.6	23.7	960	21421	3.5	31.0	33.4	1016	21123	3.5	32.9	18.9	1072	21111	3.5	33.2	26.5
905	21023	4.0	34.6	20.1	961	21421	4.0	31.0	29.8	1017	21123	4.0	32.9	15.6	1073	21111	4.0	33.2	22.8
906	21023	4.5	34.6	18.5	962	21421	4.5	31.0	25.1	1018	21123	4.5	32.9	12.3	1074	21111	4.5	33.2	19.9
907	21023	5.0	34.6	16.5	963	21421	5.0	31.0	22.3	1019	21123	5.0	32.9	11.5	1075	21111	5.0	33.2	18.5
908	21023	5.5	34.6	15.6	964	21421	5.5	31.0	19.1	1020	21123	5.5	32.9	10.7	1076	21111	5.5	33.2	15.5
909	21023	6.0	34.6	19.7	965	21421	6.0	31.0	15.0	1021	21123	6.0	32.9	9.3	1077	21111	6.0	33.2	12.7
910	21023	10.0	34.6	5.2	966	21421	10.0	31.0	7.6	1022	21123	10.0	32.9	3.1	1078	21111	10.0	33.2	5.8
911	21021	0.0	34.4	72.0	967	21423	0.0	30.4	75.1	1023	21121	0.0	33.4	73.3	1079	21112	0.0	32.2	74.4
912	21021	0.5	34.4	59.7	968	21423	0.5	30.4	73.3	1024	21121	0.5	33.4	64.9	1080	21112	0.5	32.2	64.9
913	21021	1.0	34.4	44.3	969	21423	1.0	30.4	65.0	1025	21121	1.0	33.4	57.3	1081	21112	1.0	32.2	53.4
914	21021	1.5	34.4	35.8	970	21423	1.5	30.4	57.2	1026	21121	1.5	33.4	49.3	1082	21112	1.5	32.2	45.9
915	21021	2.0	34.4	28.0	971	21423	2.0	30.4	52.0	1027	21121	2.0	33.4	44.1	1083	21112	2.0	32.2	38.3
916	21021	2.5	34.4	21.7	972	21423	2.5	30.4	45.4	1028	21121	2.5	33.4	37.7	1084	21112	2.5	32.2	31.6
917	21021	3.0	34.4	17.0	973	21423	3.0	30.4	43.0	1029	21121	3.0	33.4	33.3	1085	21112	3.0	32.2	26.8
918	21021	3.5	34.4	13.2	974	21423	3.5	30.4	35.1	1030	21121	3.5	33.4	29.3	1086	21112	3.5	32.2	23.3
919	21021	4.0	34.4	10.6	975	21423	4.0	30.4	29.6	1031	21121	4.0	33.4	24.9	1087	21112	4.0	32.2	19.3
920	21021	4.5	34.4	9.7	976	21423	4.5	30.4	25.7	1032	21121	4.5	33.4	21.3	1088	21112	4.5	32.2	17.7
921	21021	5.0	34.4	8.9	977	21423	5.0	30.4	21.7	1033	21121	5.0	33.4	17.7	1089	21112	5.0	32.2	14.9
922	21021	5.5	34.4	7.6	978	21423	5.5	30.4	18.6	1034	21121	5.5	33.4	16.1	1090	21112	5.5	32.2	14.5
923	21021	6.0	34.4	6.3	979	21423	6.0	30.4	13.9	1035	21121	6.0	33.4	13.3	1091	21112	6.0	32.2	13.3
924	21021	10.0	34.4	3.3	980	21423	10.0	30.4	5.2	1036	21121	10.0	33.4	5.3	1092	21112	10.0	32.2	6.6
925	21411	0.0	31.2	75.4	981	21413	0.0	32.1	74.9	1037	21122	0.0	32.8	74.2	1093	21323	0.0	39.6	68.6
926	21411	0.5	31.2	73.9	982	21413	0.5	32.1	72.1	1038	21122	0.5	32.8	67.3	1094	21323	0.5	39.6	57.5
927	21411	1.0	31.2	61.7	983	21413	1.0	32.1	60.2	1039	21122	1.0	32.8	60.4	1095	21323	1.0	39.6	48.3
928	21411	1.5	31.2	53.0	984	21413	1.5	32.1	52.3	1040	21122	1.5	32.8	53.9	1096	21323	1.5	39.6	40.8
929	21411	2.0	31.2	44.7	985	21413	2.0	32.1	45.2	1041	21122	2.0	32.8	47.1	1097	21323	2.0	39.6	35.2
930	21411	2.5	31.2	38.0	986	21413	2.5	32.1	39.2	1042	21122	2.5	32.8	42.4	1098	21323	2.5	39.6	29.7
931	21411	3.0	31.2	31.3	987	21413	3.0	32.1	32.5	1043	21122	3.0	32.8	36.4	1099	21323	3.0	39.6	22.1
932	21411	3.5	31.2	27.4	988	21413	3.5	32.1	28.5	1044	21122	3.5	32.8	31.4	1100	21323	3.5	39.6	20.2
933	21411	4.0	31.2	23.5	989	21413	4.0	32.1	24.5	1045	21122	4.0	32.8	27.2	1101	21323	4.0	39.6	17.0
934	21411	4.5	31.2	19.9	990	21413	4.5	32.1	21.4	1046	21122	4.5	32.8	23.4	1102	21323	4.5	39.6	15.4
935	21411	5.0	31.2	18.3	991	21413	5.0	32.1	19.8	1047	21122	5.0	32.8	20.3	1103	21323	5.0	39.6	12.2
936	21411	5.5	31.2	16.0	992	21413	5.5	32.1	17.8	1048	21122	5.5	32.8	17.2	1104	21323	5.5	39.6	11.4
937	21411	6.0	31.2	12.4	993	21413	6.0	32.1	15.0	1049	21122	6.0	32.8	15.7	1105	21323	6.0	39.6	9.0
938	21411	10.0	31.2	6.5	994	21413	10.0	32.1	7.1	1050	21122	10.0	32.8	4.3	1106	21323	10.0	39.6	4.3
939	21422	0.0	31.2	75.4	995	21412	0.0	29.4	77.0	1051	21113	0.0	33.0	73.6	1107	21322	0.0	36.4	70.9
940	21422	0.5	31.2	72.7	996	21412	0.5	29.4	73.1	1052	21113	0.5	33.0	68.4	1108	21322	0.5	36.4	62.5
941	21422	1.0	31.2	64.4	997	21412	1.0	29.4	58.3	1053	21113	1.0	33.0	61.6	1109	21322	1.0	36.4	54.9
942	21422	1.5	31.2	56.5	998	21412	1.5	29.4	48.5	1054	21113	1.5	33.0	56.4	1110	21322	1.5	36.4	46.9
943	21422	2.0	31.2	50.6	999	21412	2.0	29.4	39.1	1055	21113	2.0	33.0	50.4	1111	21322	2.0	36.4	40.5
944	21422	2.5	31.2	44.7	1000	21412	2.5	29.4	32.9	1056	21113	2.5	33.0	45.6	1112	21322	2.5	36.4	34.9
945	21422	3.0	31.2	38.8	1001	21412	3.0	29.4	25.1	1057	21113	3.0	33.0	41.2	1113	21322	3.0	36.4	30.9
946	21422	3.5	31.2	34.1	1002	21412	3.5	29.4	21.2	1058	21113	3.5	33.0	37.2	1114	21322	3.5	36.4	26.5
947	21422	4.0	31.2	29.0	1003	21412	4.0	29.4	18.0	1059	21113	4.0	33.0	32.0	1115	21322	4.0	36.4	22.9
948	21422	4.5	31.2	26.2	1004	21412	4.5	29.4	14.5	1060	21113	4.5	33.0	25.8	1116	21322	4.5	36.4	18.9
949	21422	5.0	31.2	23.1	1005	21412	5.0	29.4	13.4	1061	21113	5.0	33.0	25.6	1117	21322	5.0	36.4	17.3
950	21422	5.5	31.2	21.1	1006	21412	5.5	29.4	11.4	1062	21113	5.5	33.0	21.6	1118	21322	5.5	36.4	14.9
951	21422	6.0	31.2	16.4	1007	21412	6.0	29.4	9.8	1063	21113	6.0	33.0	20.0	1119	21322	6.0	36.4	12.1
952	21422	10.0	31.2	7.7	1008	21412	10.0	29.4	2.8	1064	21113	10.0	33.0	8.8	1120	21322	10.0	36.4	4.1

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
1121	21321	0.0	35.3	72.4	1177	21213	0.0	35.1	72.4	1233	21223	0.0	34.0	73.4	1289	22323	0.0	34.0	72.6
1122	21321	0.5	35.3	64.1	1178	21213	0.5	35.1	62.5	1234	21223	0.5	34.0	65.2	1290	22323	0.5	34.0	63.3
1123	21321	1.0	35.3	56.5	1179	21213	1.0	35.1	52.7	1235	21223	1.0	34.0	57.0	1291	22323	1.0	34.0	51.6
1124	21321	1.5	35.3	51.2	1180	21213	1.5	35.1	44.4	1236	21223	1.5	34.0	50.9	1292	22323	1.5	34.0	44.4
1125	21321	2.0	35.3	43.9	1181	21213	2.0	35.1	37.3	1237	21223	2.0	34.0	44.5	1293	22323	2.0	34.0	39.5
1126	21321	2.5	35.3	39.8	1182	21213	2.5	35.1	31.0	1238	21223	2.5	34.0	37.0	1294	22323	2.5	34.0	34.3
1127	21321	3.0	35.3	33.3	1183	21213	3.0	35.1	27.1	1239	21223	3.0	34.0	33.3	1295	22323	3.0	34.0	28.2
1128	21321	3.5	35.3	28.9	1184	21213	3.5	35.1	23.1	1240	21223	3.5	34.0	29.1	1296	22323	3.5	34.0	24.2
1129	21321	4.0	35.3	24.9	1185	21213	4.0	35.1	19.2	1241	21223	4.0	34.0	25.0	1297	22323	4.0	34.0	20.2
1130	21321	4.5	35.3	21.1	1186	21213	4.5	35.1	15.7	1242	21223	4.5	34.0	21.6	1298	22323	4.5	34.0	16.5
1131	21321	5.0	35.3	18.4	1187	21213	5.0	35.1	14.9	1243	21223	5.0	34.0	18.3	1299	22323	5.0	34.0	15.3
1132	21321	5.5	35.3	17.0	1188	21213	5.5	35.1	11.3	1244	21223	5.5	34.0	16.0	1300	22323	5.5	34.0	12.1
1133	21321	6.0	35.3	13.5	1189	21213	6.0	35.1	10.9	1245	21223	6.0	34.0	14.5	1301	22323	6.0	34.0	11.7
1134	21321	10.0	35.3	4.4	1190	21213	10.0	35.1	4.3	1246	21223	10.0	34.0	5.9	1302	22323	10.0	34.0	4.0
1135	21311	0.0	36.0	71.2	1191	21222	0.0	35.0	72.8	1247	21221	0.0	34.8	72.8	1303	22312	0.0	33.8	73.0
1136	21311	0.5	36.0	64.0	1192	21222	0.5	35.0	61.5	1248	21221	0.5	34.8	64.1	1304	22312	0.5	33.8	65.0
1137	21311	1.0	36.0	58.8	1193	21222	1.0	35.0	53.7	1249	21221	1.0	34.8	54.5	1305	22312	1.0	33.8	53.0
1138	21311	1.5	36.0	52.4	1194	21222	1.5	35.0	45.9	1250	21221	1.5	34.8	46.5	1306	22312	1.5	33.8	47.8
1139	21311	2.0	36.0	47.2	1195	21222	2.0	35.0	38.5	1251	21221	2.0	34.8	38.4	1307	22312	2.0	33.8	41.0
1140	21311	2.5	36.0	43.2	1196	21222	2.5	35.0	33.9	1252	21221	2.5	34.8	29.7	1308	22312	2.5	33.8	37.0
1141	21311	3.0	36.0	38.4	1197	21222	3.0	35.0	27.2	1253	21221	3.0	34.8	25.9	1309	22312	3.0	33.8	32.6
1142	21311	3.5	36.0	34.8	1198	21222	3.5	35.0	23.3	1254	21221	3.5	34.8	22.0	1310	22312	3.5	33.8	28.2
1143	21311	4.0	36.0	30.8	1199	21222	4.0	35.0	20.6	1255	21221	4.0	34.8	18.2	1311	22312	4.0	33.8	25.0
1144	21311	4.5	36.0	27.2	1200	21222	4.5	35.0	13.7	1256	21221	4.5	34.8	14.4	1312	22312	4.5	33.8	21.0
1145	21311	5.0	36.0	24.0	1201	21222	5.0	35.0	14.8	1257	21221	5.0	34.8	13.2	1313	22312	5.0	33.8	17.8
1146	21311	5.5	36.0	21.2	1202	21222	5.5	35.0	13.6	1258	21221	5.5	34.8	10.5	1314	22312	5.5	33.8	16.6
1147	21311	6.0	36.0	19.2	1203	21222	6.0	35.0	11.7	1259	21221	6.0	34.8	7.9	1315	22312	6.0	33.8	13.0
1148	21311	10.0	36.0	7.2	1204	21222	10.0	35.0	5.8	1260	21221	10.0	34.8	2.9	1316	22312	10.0	33.8	5.0
1149	21313	0.0	36.0	71.2	1205	21211	0.0	34.7	72.9	1261	22321	0.0	36.2	71.7	1317	22311	0.0	33.4	73.9
1150	21313	0.5	36.0	62.8	1206	21211	0.5	34.7	65.2	1262	22321	0.5	36.2	57.4	1318	22311	0.5	33.4	64.9
1151	21313	1.0	36.0	54.8	1207	21211	1.0	34.7	57.7	1263	22321	1.0	36.2	41.6	1319	22311	1.0	33.4	53.2
1152	21313	1.5	36.0	48.4	1208	21211	1.5	34.7	50.0	1264	22321	1.5	36.2	33.1	1320	22311	1.5	33.4	45.8
1153	21313	2.0	36.0	42.0	1209	21211	2.0	34.7	45.5	1265	22321	2.0	36.2	28.1	1321	22311	2.0	33.4	40.3
1154	21313	2.5	36.0	38.0	1210	21211	2.5	34.7	38.6	1266	22321	2.5	36.2	21.6	1322	22311	2.5	33.4	37.6
1155	21313	3.0	36.0	32.4	1211	21211	3.0	34.7	34.8	1267	22321	3.0	36.2	17.7	1323	22311	3.0	33.4	29.8
1156	21313	3.5	36.0	28.0	1212	21211	3.5	34.7	30.2	1268	22321	3.5	36.2	13.8	1324	22311	3.5	33.4	26.3
1157	21313	4.0	36.0	24.4	1213	21211	4.0	34.7	25.4	1269	22321	4.0	36.2	11.5	1325	22311	4.0	33.4	22.3
1158	21313	4.5	36.0	19.6	1214	21211	4.5	34.7	23.4	1270	22321	4.5	36.2	10.0	1326	22311	4.5	33.4	19.2
1159	21313	5.0	36.0	19.2	1215	21211	5.0	34.7	19.5	1271	22321	5.0	36.2	8.8	1327	22311	5.0	33.4	16.5
1160	21313	5.5	36.0	15.6	1216	21211	5.5	34.7	15.5	1272	22321	5.5	36.2	6.9	1328	22311	5.5	33.4	14.1
1161	21313	6.0	36.0	15.2	1217	21211	6.0	34.7	15.4	1273	22321	6.0	36.2	6.1	1329	22311	6.0	33.4	12.2
1162	21313	10.0	36.0	5.2	1218	21211	10.0	34.7	4.3	1274	22321	10.0	36.2	2.3	1330	22311	10.0	33.4	2.4
1163	21312	0.0	35.8	71.4	1219	21212	0.0	34.4	73.1	1275	22322	0.0	34.1	72.7	1331	22313	0.0	34.1	72.7
1164	21312	0.5	35.8	60.2	1220	21212	0.5	34.4	68.4	1276	22322	0.5	34.1	64.3	1332	22313	0.5	34.1	65.5
1165	21312	1.0	35.8	50.2	1221	21212	1.0	34.4	61.0	1277	22322	1.0	34.1	53.5	1333	22313	1.0	34.1	53.5
1166	21312	1.5	35.8	42.6	1222	21212	1.5	34.4	55.7	1278	22322	1.5	34.1	47.5	1334	22313	1.5	34.1	48.3
1167	21312	2.0	35.8	35.8	1223	21212	2.0	34.4	50.5	1279	22322	2.0	34.1	40.3	1335	22313	2.0	34.1	43.5
1168	21312	2.5	35.8	30.6	1224	21212	2.5	34.4	45.4	1280	22322	2.5	34.1	36.3	1336	22313	2.5	34.1	38.3
1169	21312	3.0	35.8	23.4	1225	21212	3.0	34.4	41.5	1281	22322	3.0	34.1	29.9	1337	22313	3.0	34.1	33.9
1170	21312	3.5	35.8	19.4	1226	21212	3.5	34.4	37.6	1282	22322	3.5	34.1	25.1	1338	22313	3.5	34.1	29.5
1171	21312	4.0	35.8	15.4	1227	21212	4.0	34.4	33.7	1283	22322	4.0	34.1	21.1	1339	22313	4.0	34.1	26.3
1172	21312	4.5	35.8	14.6	1228	21212	4.5	34.4	29.8	1284	22322	4.5	34.1	17.5	1340	22313	4.5	34.1	22.3
1173	21312	5.0	35.8	12.2	1229	21212	5.0	34.4	25.9	1285	22322	5.0	34.1	16.3	1341	22313	5.0	34.1	19.1
1174	21312	5.5	35.8	11.4	1230	21212	5.5	34.4	23.9	1286	22322	5.5	34.1	12.3	1342	22313	5.5	34.1	17.9
1175	21312	6.0	35.8	9.0	1231	21212	6.0	34.4	22.0	1287	22322	6.0	34.1	9.9	1343	22313	6.0	34.1	13.9
1176	21312	10.0	35.8	3.4	1232	21212	10.0	34.4	9.8	1288	22322	10.0	34.1	2.3	1344	22313	10.0	34.1	5.9

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
1345	22212	0.0	37.8	69.8	1401	22211	0.0	35.7	71.4	1457	22013	0.0	31.1	75.7	1513	22113	0.0	30.0	76.0
1346	22212	0.5	37.8	57.4	1402	22211	0.5	35.7	61.4	1458	22013	0.5	31.1	66.8	1514	22113	0.5	30.0	64.0
1347	22212	1.0	37.8	48.2	1403	22211	1.0	35.7	51.4	1459	22013	1.0	31.1	58.2	1515	22113	1.0	30.0	55.6
1348	22212	1.5	37.8	39.4	1404	22211	1.5	35.7	41.8	1460	22013	1.5	31.1	50.8	1516	22113	1.5	30.0	47.2
1349	22212	2.0	37.8	31.8	1405	22211	2.0	35.7	37.0	1461	22013	2.0	31.1	45.2	1517	22113	2.0	30.0	39.6
1350	22212	2.5	37.8	25.8	1406	22211	2.5	35.7	31.4	1462	22013	2.5	31.1	39.6	1518	22113	2.5	30.0	32.8
1351	22212	3.0	37.8	20.6	1407	22211	3.0	35.7	25.2	1463	22013	3.0	31.1	35.2	1519	22113	3.0	30.0	27.6
1352	22212	3.5	37.8	17.4	1408	22211	3.5	35.7	22.6	1464	22013	3.5	31.1	30.3	1520	22113	3.5	30.0	22.8
1353	22212	4.0	37.8	14.6	1409	22211	4.0	35.7	17.8	1465	22013	4.0	31.1	24.8	1521	22113	4.0	30.0	19.2
1354	22212	4.5	37.8	12.2	1410	22211	4.5	35.7	17.0	1466	22013	4.5	31.1	21.0	1522	22113	4.5	30.0	15.6
1355	22212	5.0	37.8	11.4	1411	22211	5.0	35.7	14.2	1467	22013	5.0	31.1	18.0	1523	22113	5.0	30.0	13.2
1356	22212	5.5	37.8	9.0	1412	22211	5.5	35.7	11.0	1468	22013	5.5	31.1	15.5	1524	22113	5.5	30.0	11.6
1357	22212	6.0	37.8	7.8	1413	22211	6.0	35.7	9.8	1469	22013	6.0	31.1	13.6	1525	22113	6.0	30.0	10.0
1358	22212	10.0	37.8	3.0	1414	22211	10.0	35.7	5.8	1470	22013	10.0	31.1	4.7	1526	22113	10.0	30.0	3.6
1359	22222	0.0	37.8	70.9	1415	22221	0.0	34.8	73.2	1471	22021	0.0	30.7	76.2	1527	22122	0.0	29.2	77.0
1360	22222	0.5	37.8	61.3	1416	22221	0.5	34.8	63.2	1472	22021	0.5	30.7	69.6	1528	22122	0.5	29.2	69.1
1361	22222	1.0	37.8	54.0	1417	22221	1.0	34.8	55.5	1473	22021	1.0	30.7	63.4	1529	22122	1.0	29.2	61.7
1362	22222	1.5	37.8	47.8	1418	22221	1.5	34.8	49.8	1474	22021	1.5	30.7	56.8	1530	22122	1.5	29.2	56.1
1363	22222	2.0	37.8	40.2	1419	22221	2.0	34.8	41.2	1475	22021	2.0	30.7	51.8	1531	22122	2.0	29.2	49.4
1364	22222	2.5	37.8	36.3	1420	22221	2.5	34.8	37.1	1476	22021	2.5	30.7	46.0	1532	22122	2.5	29.2	45.1
1365	22222	3.0	37.8	31.7	1421	22221	3.0	34.8	32.2	1477	22021	3.0	30.7	41.3	1533	22122	3.0	29.2	39.6
1366	22222	3.5	37.8	27.5	1422	22221	3.5	34.8	27.8	1478	22021	3.5	30.7	37.1	1534	22122	3.5	29.2	33.7
1367	22222	4.0	37.8	23.6	1423	22221	4.0	34.8	23.7	1479	22021	4.0	30.7	32.0	1535	22122	4.0	29.2	29.8
1368	22222	4.5	37.8	20.5	1424	22221	4.5	34.8	20.5	1480	22021	4.5	30.7	28.1	1536	22122	4.5	29.2	25.8
1369	22222	5.0	37.8	17.1	1425	22221	5.0	34.8	15.8	1481	22021	5.0	30.7	24.7	1537	22122	5.0	29.2	22.7
1370	22222	5.5	37.8	14.4	1426	22221	5.5	34.8	13.8	1482	22021	5.5	30.7	21.6	1538	22122	5.5	29.2	19.9
1371	22222	6.0	37.8	12.1	1427	22221	6.0	34.8	11.4	1483	22021	6.0	30.7	18.1	1539	22122	6.0	29.2	18.0
1372	22222	10.0	37.8	5.2	1428	22221	10.0	34.8	4.8	1484	22021	10.0	30.7	5.7	1540	22122	10.0	29.2	5.7
1373	22213	0.0	37.3	70.9	1429	22023	0.0	33.9	72.9	1485	22012	0.0	31.9	74.7	1541	22121	0.0	28.5	77.2
1374	22213	0.5	37.3	63.8	1430	22023	0.5	33.9	62.9	1486	22012	0.5	31.9	67.0	1542	22121	0.5	28.5	69.2
1375	22213	1.0	37.3	58.4	1431	22023	1.0	33.9	52.1	1487	22012	1.0	31.9	57.5	1543	22121	1.0	28.5	62.4
1376	22213	1.5	37.3	52.1	1432	22023	1.5	33.9	43.7	1488	22012	1.5	31.9	50.2	1544	22121	1.5	28.5	56.8
1377	22213	2.0	37.3	48.2	1433	22023	2.0	33.9	37.7	1489	22012	2.0	31.9	44.7	1545	22121	2.0	28.5	50.4
1378	22213	2.5	37.3	43.5	1434	22023	2.5	33.9	31.7	1490	22012	2.5	31.9	40.4	1546	22121	2.5	28.5	44.8
1379	22213	3.0	37.3	38.0	1435	22023	3.0	33.9	25.5	1491	22012	3.0	31.9	36.1	1547	22121	3.0	28.5	40.8
1380	22213	3.5	37.3	34.1	1436	22023	3.5	33.9	21.3	1492	22012	3.5	31.9	31.8	1548	22121	3.5	28.5	35.6
1381	22213	4.0	37.3	29.5	1437	22023	4.0	33.9	16.9	1493	22012	4.0	31.9	23.3	1549	22121	4.0	28.5	31.6
1382	22213	4.5	37.3	26.7	1438	22023	4.5	33.9	14.5	1494	22012	4.5	31.9	21.1	1550	22121	4.5	28.5	28.4
1383	22213	5.0	37.3	24.8	1439	22023	5.0	33.9	11.7	1495	22012	5.0	31.9	19.0	1551	22121	5.0	28.5	24.8
1384	22213	5.5	37.3	20.9	1440	22023	5.5	33.9	9.7	1496	22012	5.5	31.9	16.8	1552	22121	5.5	28.5	20.8
1385	22213	6.0	37.3	17.3	1441	22023	6.0	33.9	7.7	1497	22012	6.0	31.9	14.7	1553	22121	6.0	28.5	18.4
1386	22213	10.0	37.3	7.2	1442	22023	10.0	33.9	2.9	1498	22012	10.0	31.9	5.2	1554	22121	10.0	28.5	5.6
1387	22223	0.0	36.5	71.0	1443	22011	0.0	31.1	75.7	1499	22022	0.0	30.9	75.3	1555	22112	0.0	30.0	76.6
1388	22223	0.5	36.5	64.3	1444	22011	0.5	31.1	63.2	1500	22022	0.5	30.9	63.3	1556	22112	0.5	30.0	68.8
1389	22223	1.0	36.5	57.5	1445	22011	1.0	31.1	52.3	1501	22022	1.0	30.9	52.1	1557	22112	1.0	30.0	61.3
1390	22223	1.5	36.5	52.4	1446	22011	1.5	31.1	44.5	1502	22022	1.5	30.9	43.3	1558	22112	1.5	30.0	56.3
1391	22223	2.0	36.5	45.6	1447	22011	2.0	31.1	38.2	1503	22022	2.0	30.9	36.9	1559	22112	2.0	30.0	50.0
1392	22223	2.5	36.5	41.7	1448	22011	2.5	31.1	32.7	1504	22022	2.5	30.9	30.5	1560	22112	2.5	30.0	45.3
1393	22223	3.0	36.5	37.7	1449	22011	3.0	31.1	27.3	1505	22022	3.0	30.9	24.9	1561	22112	3.0	30.0	39.8
1394	22223	3.5	36.5	33.3	1450	22011	3.5	31.1	22.6	1506	22022	3.5	30.9	20.5	1562	22112	3.5	30.0	35.2
1395	22223	4.0	36.5	29.0	1451	22011	4.0	31.1	17.9	1507	22022	4.0	30.9	17.3	1563	22112	4.0	30.0	30.5
1396	22223	4.5	36.5	25.8	1452	22011	4.5	31.1	15.2	1508	22022	4.5	30.9	14.5	1564	22112	4.5	30.0	27.0
1397	22223	5.0	36.5	21.8	1453	22011	5.0	31.1	13.2	1509	22022	5.0	30.9	11.3	1565	22112	5.0	30.0	23.8
1398	22223	5.5	36.5	18.3	1454	22011	5.5	31.1	10.5	1510	22022	5.5	30.9	10.5	1566	22112	5.5	30.0	21.1
1399	22223	6.0	36.5	16.7	1455	22011	6.0	31.1	9.3	1511	22022	6.0	30.9	9.3	1567	22112	6.0	30.0	18.0
1400	22223	10.0	36.5	6.0	1456	22011	10.0	31.1	3.0	1512	22022	10.0	30.9	4.1	1568	22112	10.0	30.0	6.3

OBS	TREAT	TIME	DRMT	MCWB
1569	22111	0.0	29.4	76.7
1570	22111	0.5	29.4	68.1
1571	22111	1.0	29.4	59.1
1572	22111	1.5	29.4	48.5
1573	22111	2.0	29.4	44.4
1574	22111	2.5	29.4	40.3
1575	22111	3.0	29.4	35.4
1576	22111	3.5	29.4	28.0
1577	22111	4.0	29.4	26.0
1578	22111	4.5	29.4	23.1
1579	22111	5.0	29.4	17.0
1580	22111	5.5	29.4	15.8
1581	22111	6.0	29.4	14.5
1582	22111	10.0	29.4	4.7
1583	22123	0.0	29.3	76.9
1584	22123	0.5	29.3	60.9
1585	22123	1.0	29.3	51.6
1586	22123	1.5	29.3	40.9
1587	22123	2.0	29.3	35.2
1588	22123	2.5	29.3	27.8
1589	22123	3.0	29.3	23.3
1590	22123	3.5	29.3	19.2
1591	22123	4.0	29.3	15.5
1592	22123	4.5	29.3	12.2
1593	22123	5.0	29.3	11.4
1594	22123	5.5	29.3	9.0
1595	22123	6.0	29.3	7.3
1596	22123	10.0	29.3	3.2
1597	22423	0.0	29.9	75.9
1598	22423	0.5	29.9	63.8
1599	22423	1.0	29.9	55.7
1600	22423	1.5	29.9	46.0
1601	22423	2.0	29.9	40.0
1602	22423	2.5	29.9	34.4
1603	22423	3.0	29.9	27.5
1604	22423	3.5	29.9	23.5
1605	22423	4.0	29.9	19.4
1606	22423	4.5	29.9	15.4
1607	22423	5.0	29.9	13.4
1608	22423	5.5	29.9	11.4
1609	22423	6.0	29.9	9.0
1610	22423	10.0	29.9	3.3
1611	22421	0.0	29.2	77.0
1612	22421	0.5	29.2	68.7
1613	22421	1.0	29.2	64.6
1614	22421	1.5	29.2	53.9
1615	22421	2.0	29.2	46.8
1616	22421	2.5	29.2	42.0
1617	22421	3.0	29.2	36.9
1618	22421	3.5	29.2	30.9
1619	22421	4.0	29.2	26.9
1620	22421	4.5	29.2	22.9
1621	22421	5.0	29.2	19.4
1622	22421	5.5	29.2	17.8
1623	22421	6.0	29.2	14.2
1624	22421	10.0	29.2	4.3

OBS	TREAT	TIME	DRMT	MCWB
1625	22412	0.0	30.5	75.6
1626	22412	0.5	30.5	63.0
1627	22412	1.0	30.5	61.2
1628	22412	1.5	30.5	55.0
1629	22412	2.0	30.5	49.6
1630	22412	2.5	30.5	44.0
1631	22412	3.0	30.5	40.0
1632	22412	3.5	30.5	34.8
1633	22412	4.0	30.5	30.0
1634	22412	4.5	30.5	26.8
1635	22412	5.0	30.5	23.2
1636	22412	5.5	30.5	20.0
1637	22412	6.0	30.5	15.8
1638	22412	10.0	30.5	5.4
1639	22422	0.0	30.7	76.0
1640	22422	0.5	30.7	69.4
1641	22422	1.0	30.7	63.5
1642	22422	1.5	30.7	57.7
1643	22422	2.0	30.7	53.8
1644	22422	2.5	30.7	47.9
1645	22422	3.0	30.7	41.2
1646	22422	3.5	30.7	38.1
1647	22422	4.0	30.7	34.2
1648	22422	4.5	30.7	30.3
1649	22422	5.0	30.7	25.4
1650	22422	5.5	30.7	24.1
1651	22422	6.0	30.7	19.4
1652	22422	10.0	30.7	7.7
1653	22411	0.0	31.5	74.8
1654	22411	0.5	31.5	66.4
1655	22411	1.0	31.5	58.8
1656	22411	1.5	31.5	53.6
1657	22411	2.0	31.5	45.4
1658	22411	2.5	31.5	43.2
1659	22411	3.0	31.5	33.4
1660	22411	3.5	31.5	32.4
1661	22411	4.0	31.5	29.2
1662	22411	4.5	31.5	27.2
1663	22411	5.0	31.5	22.4
1664	22411	5.5	31.5	18.4
1665	22411	6.0	31.5	17.6
1666	22411	10.0	31.5	3.8
1667	22413	0.0	30.7	75.4
1668	22413	0.5	30.7	63.8
1669	22413	1.0	30.7	55.4
1670	22413	1.5	30.7	51.4
1671	22413	2.0	30.7	39.4
1672	22413	2.5	30.7	34.6
1673	22413	3.0	30.7	28.6
1674	22413	3.5	30.7	23.4
1675	22413	4.0	30.7	19.4
1676	22413	4.5	30.7	17.8
1677	22413	5.0	30.7	15.4
1678	22413	5.5	30.7	13.8
1679	22413	6.0	30.7	11.8
1680	22413	10.0	30.7	7.0

OBS	TREAT	TIME	DRMT	MCWB
1681	23322	0.0	30.7	76.0
1682	23322	0.5	30.7	64.3
1683	23322	1.0	30.7	54.5
1684	23322	1.5	30.7	45.5
1685	23322	2.0	30.7	40.1
1686	23322	2.5	30.7	33.0
1687	23322	3.0	30.7	25.6
1688	23322	3.5	30.7	21.3
1689	23322	4.0	30.7	17.4
1690	23322	4.5	30.7	13.5
1691	23322	5.0	30.7	12.3
1692	23322	5.5	30.7	9.6
1693	23322	6.0	30.7	9.2
1694	23322	10.0	30.7	4.1
1695	23311	0.0	30.7	75.4
1696	23311	0.5	30.7	66.6
1697	23311	1.0	30.7	58.6
1698	23311	1.5	30.7	52.2
1699	23311	2.0	30.7	45.4
1700	23311	2.5	30.7	40.2
1701	23311	3.0	30.7	33.8
1702	23311	3.5	30.7	29.4
1703	23311	4.0	30.7	25.0
1704	23311	4.5	30.7	21.4
1705	23311	5.0	30.7	17.8
1706	23311	5.5	30.7	15.8
1707	23311	6.0	30.7	13.4
1708	23311	10.0	30.7	5.4
1709	23321	0.0	31.1	75.3
1710	23321	0.5	31.1	68.2
1711	23321	1.0	31.1	62.2
1712	23321	1.5	31.1	55.5
1713	23321	2.0	31.1	50.3
1714	23321	2.5	31.1	44.8
1715	23321	3.0	31.1	38.8
1716	23321	3.5	31.1	34.4
1717	23321	4.0	31.1	29.7
1718	23321	4.5	31.1	26.5
1719	23321	5.0	31.1	22.5
1720	23321	5.5	31.1	19.0
1721	23321	6.0	31.1	17.4
1722	23321	10.0	31.1	5.9
1723	23323	0.0	29.0	76.8
1724	23323	0.5	29.0	68.8
1725	23323	1.0	29.0	60.8
1726	23323	1.5	29.0	55.2
1727	23323	2.0	29.0	48.8
1728	23323	2.5	29.0	43.2
1729	23323	3.0	29.0	36.8
1730	23323	3.5	29.0	32.8
1731	23323	4.0	29.0	28.0
1732	23323	4.5	29.0	24.0
1733	23323	5.0	29.0	20.8
1734	23323	5.5	29.0	17.2
1735	23323	6.0	29.0	15.6
1736	23323	10.0	29.0	4.8

OBS	TREAT	TIME	DRMT	MCWB
1737	23312	0.0	29.5	76.2
1738	23312	0.5	29.5	67.3
1739	23312	1.0	29.5	58.3
1740	23312	1.5	29.5	52.0
1741	23312	2.0	29.5	45.7
1742	23312	2.5	29.5	40.4
1743	23312	3.0	29.5	34.5
1744	23312	3.5	29.5	30.1
1745	23312	4.0	29.5	22.4
1746	23312	4.5	29.5	22.0
1747	23312	5.0	29.5	18.0
1748	23312	5.5	29.5	16.6
1749	23312	6.0	29.5	13.5
1750	23312	10.0	29.5	4.5
1751	23313	0.0	31.5	74.8
1752	23313	0.5	31.5	62.7
1753	23313	1.0	31.5	53.9
1754	23313	1.5	31.5	45.6
1755	23313	2.0	31.5	38.1
1756	23313	2.5	31.5	32.2
1757	23313	3.0	31.5	26.4
1758	23313	3.5	31.5	21.8
1759	23313	4.0	31.5	18.4
1760	23313	4.5	31.5	16.3
1761	23313	5.0	31.5	13.4
1762	23313	5.5	31.5	12.2
1763	23313	6.0	31.5	10.9
1764	23313	10.0	31.5	5.0
1765	23413	0.0	26.2	78.3
1766	23413	0.5	26.2	68.8
1767	23413	1.0	26.2	59.8
1768	23413	1.5	26.2	52.4
1769	23413	2.0	26.2	45.5
1770	23413	2.5	26.2	39.4
1771	23413	3.0	26.2	35.0
1772	23413	3.5	26.2	30.7
1773	23413	4.0	26.2	26.4
1774	23413	4.5	26.2	22.5
1775	23413	5.0	26.2	21.2
1776	23413	5.5	26.2	17.8
1777	23413	6.0	26.2	16.4
1778	23413	10.0	26.2	8.2
1779	23412	0.0	25.5	79.1
1780	23412	0.5	25.5	70.1
1781	23412	1.0	25.5	61.9
1782	23412	1.5	25.5	54.9
1783	23412	2.0	25.5	49.6
1784	23412	2.5	25.5	43.9
1785	23412	3.0	25.5	37.3
1786	23412	3.5	25.5	33.2
1787	23412	4.0	25.5	29.5
1788	23412	4.5	25.5	25.4
1789	23412	5.0	25.5	24.2
1790	23412	5.5	25.5	16.6
1791	23412	6.0	25.5	18.0
1792	23412	10.0	25.5	24.6

OBS	TREAT	TIME	DRMT	MCWB
1793	23411	0.0	26.3	79.0
1794	23411	0.5	26.3	71.0
1795	23411	1.0	26.3	63.4
1796	23411	1.5	26.3	58.6
1797	23411	2.0	26.3	51.8
1798	23411	2.5	26.3	47.0
1799	23411	3.0	26.3	42.6
1800	23411	3.5	26.3	38.2
1801	23411	4.0	26.3	34.2
1802	23411	4.5	26.3	30.2
1803	23411	5.0	26.3	27.0
1804	23411	5.5	26.3	23.8
1805	23411	6.0	26.3	22.2
1806	23411	10.0	26.3	9.0
1807	23421	0.0	27.4	77.7
1808	23421	0.5	27.4	69.6
1809	23421	1.0	27.4	62.7
1810	23421	1.5	27.4	55.4
1811	23421	2.0	27.4	50.5
1812	23421	2.5	27.4	44.8
1813	23421	3.0	27.4	39.9
1814	23421	3.5	27.4	35.0
1815	23421	4.0	27.4	31.0
1816	23421	4.5	27.4	27.3
1817	23421	5.0	27.4	24.1
1818	23421	5.5	27.4	22.4
1819	23421	6.0	27.4	18.8
1820	23421	10.0	27.4	6.6
1821	23423	0.0	25.7	79.6
1822	23423	0.5	25.7	69.6
1823	23423	1.0	25.7	60.9
1824	23423	1.5	25.7	56.4
1825	23423	2.0	25.7	50.8
1826	23423	2.5	25.7	44.7
1827	23423	3.0	25.7	39.0
1828	23423	3.5	25.7	34.7
1829	23423	4.0	25.7	30.3
1830	23423	4.5	25.7	25.5
1831	23423	5.0	25.7	22.0
1832	23423	5.5	25.7	20.2
1833	23423	6.0	25.7	18.5
1834	23423	10.0	25.7	8.4
1835	23422	0.0	24.7	79.4
1836	23422	0.5	24.7	66.9
1837	23422	1.0	24.7	58.6
1838	23422	1.5	24.7	50.3
1839	23422	2.0	24.7	43.2
1840	23422	2.5	24.7	37.8
1841	23422	3.0	24.7	31.9
1842	23422	3.5	24.7	28.2
1843	23422	4.0	24.7	24.4
1844	23422	4.5	24.7	21.1
1845	23422	5.0	24.7	17.8
1846	23422	5.5	24.7	16.9
1847	23422	6.0	24.7	13.6
1848	23422	10.0	24.7	7.8

OBS	TREAT	TIME	DRMT	MCWB
1849	23023	0.0	26.3	79.6
1850	23023	0.5	26.3	69.1
1851	23023	1.0	26.3	58.7
1852	23023	1.5	26.3	50.5
1853	23023	2.0	26.3	43.2
1854	23023	2.5	26.3	37.8
1855	23023	3.0	26.3	31.2
1856	23023	3.5	26.3	27.3
1857	23023	4.0	26.3	23.4
1858	23023	4.5	26.3	18.8
1859	23023	5.0	26.3	15.7
1860	23023	5.5	26.3	14.1
1861	23023	6.0	26.3	11.8
1862	23023	10.0	26.3	5.2
1863	23021	0.0	27.9	78.4
1864	23021	0.5	27.9	71.0
1865	23021	1.0	27.9	63.6
1866	23021	1.5	27.9	55.7
1867	23021	2.0	27.9	52.0
1868	23021	2.5	27.9	45.8
1869	23021	3.0	27.9	41.2
1870	23021	3.5	27.9	37.3
1871	23021	4.0	27.9	33.4
1872	23021	4.5	27.9	29.1
1873	23021	5.0	27.9	25.7
1874	23021	5.5	27.9	21.8
1875	23021	6.0	27.9	19.5
1876	23021	10.0	27.9	6.7
1877	23022	0.0	29.6	77.1
1878	23022	0.5	29.6	70.5
1879	23022	1.0	29.6	63.5
1880	23022	1.5	29.6	53.1
1881	23022	2.0	29.6	51.1
1882	23022	2.5	29.6	45.4
1883	23022	3.0	29.6	40.6
1884	23022	3.5	29.6	35.6
1885	23022	4.0	29.6	31.7
1886	23022	4.5	29.6	27.8
1887	23022	5.0	29.6	24.0
1888	23022	5.5	29.6	20.1
1889	23022	6.0	29.6	15.6
1890	23022	10.0	29.6	4.6
1891	23013	0.0	28.1	78.2
1892	23013	0.5	28.1	71.6
1893	23013	1.0	28.1	64.7
1894	23013	1.5	28.1	60.0
1895	23013	2.0	28.1	55.0
1896	23013	2.5	28.1	49.5
1897	23013	3.0	28.1	45.3
1898	23013	3.5	28.1	41.0
1899	23013	4.0	28.1	37.1
1900	23013	4.5	28.1	33.3
1901	23013	5.0	28.1	29.8
1902	23013	5.5	28.1	27.4
1903	23013	6.0	28.1	24.3
1904	23013	10.0	28.1	9.6

OBS	TREAT	TIME	DRMT	MCWB
1905	23011	0.0	27.9	78.4
1906	23011	0.5	27.9	70.7
1907	23011	1.0	27.9	61.9
1908	23011	1.5	27.9	53.8
1909	23011	2.0	27.9	46.1
1910	23011	2.5	27.9	40.5
1911	23011	3.0	27.9	35.7
1912	23011	3.5	27.9	31.0
1913	23011	4.0	27.9	26.4
1914	23011	4.5	27.9	18.7
1915	23011	5.0	27.9	18.3
1916	23011	5.5	27.9	14.3
1917	23011	6.0	27.9	13.1
1918	23011	10.0	27.9	5.4
1919	23012	0.0	28.5	78.1
1920	23012	0.5	28.5	68.8
1921	23012	1.0	28.5	60.0
1922	23012	1.5	28.5	52.7
1923	23012	2.0	28.5	45.8
1924	23012	2.5	28.5	38.8
1925	23012	3.0	28.5	34.2
1926	23012	3.5	28.5	29.2
1927	23012	4.0	28.5	23.8
1928	23012	4.5	28.5	19.6
1929	23012	5.0	28.5	16.9
1930	23012	5.5	28.5	14.2
1931	23012	6.0	28.5	11.2
1932	23012	10.0	28.5	4.2
1933	23122	0.0	31.6	74.7
1934	23122	0.5	31.6	66.7
1935	23122	1.0	31.6	58.7
1936	23122	1.5	31.6	51.1
1937	23122	2.0	31.6	46.3
1938	23122	2.5	31.6	39.1
1939	23122	3.0	31.6	34.7
1940	23122	3.5	31.6	30.7
1941	23122	4.0	31.6	25.9
1942	23122	4.5	31.6	22.3
1943	23122	5.0	31.6	18.7
1944	23122	5.5	31.6	15.9
1945	23122	6.0	31.6	14.3
1946	23122	10.0	31.6	5.5
1947	23111	0.0	30.0	76.0
1948	23111	0.5	30.0	66.8
1949	23111	1.0	30.0	58.4
1950	23111	1.5	30.0	52.0
1951	23111	2.0	30.0	45.2
1952	23111	2.5	30.0	40.0
1953	23111	3.0	30.0	34.0
1954	23111	3.5	30.0	28.8
1955	23111	4.0	30.0	24.8
1956	23111	4.5	30.0	20.0
1957	23111	5.0	30.0	16.0
1958	23111	5.5	30.0	14.4
1959	23111	6.0	30.0	12.0
1960	23111	10.0	30.0	4.0

OBS	TREAT	TIME	DRMT	MCWB
1961	23121	0.0	29.8	76.7
1962	23121	0.5	29.8	68.1
1963	23121	1.0	29.8	60.7
1964	23121	1.5	29.8	53.3
1965	23121	2.0	29.8	48.2
1966	23121	2.5	29.8	42.0
1967	23121	3.0	29.8	37.7
1968	23121	3.5	29.8	33.0
1969	23121	4.0	29.8	28.3
1970	23121	4.5	29.8	24.0
1971	23121	5.0	29.8	20.5
1972	23121	5.5	29.8	18.1
1973	23121	6.0	29.8	15.0
1974	23121	10.0	29.8	4.5
1975	23113	0.0	31.4	75.5
1976	23113	0.5	31.4	68.8
1977	23113	1.0	31.4	64.9
1978	23113	1.5	31.4	60.2
1979	23113	2.0	31.4	55.9
1980	23113	2.5	31.4	51.6
1981	23113	3.0	31.4	47.0
1982	23113	3.5	31.4	43.0
1983	23113	4.0	31.4	38.8
1984	23113	4.5	31.4	35.2
1985	23113	5.0	31.4	32.1
1986	23113	5.5	31.4	29.0
1987	23113	6.0	31.4	25.9
1988	23113	10.0	31.4	10.2
1989	23112	0.0	32.2	74.6
1990	23112	0.5	32.2	66.5
1991	23112	1.0	32.2	59.1
1992	23112	1.5	32.2	52.9
1993	23112	2.0	32.2	48.4
1994	23112	2.5	32.2	43.9
1995	23112	3.0	32.2	39.4
1996	23112	3.5	32.2	35.4
1997	23112	4.0	32.2	31.3
1998	23112	4.5	32.2	26.8
1999	23112	5.0	32.2	24.7
2000	23112	5.5	32.2	22.2
2001	23112	6.0	32.2	19.0
2002	23112	10.0	32.2	9.5
2003	23123	0.0	30.2	75.6
2004	23123	0.5	30.2	63.5
2005	23123	1.0	30.2	53.5
2006	23123	1.5	30.2	41.8
2007	23123	2.0	30.2	39.4
2008	23123	2.5	30.2	35.7
2009	23123	3.0	30.2	31.3
2010	23123	3.5	30.2	26.9
2011	23123	4.0	30.2	22.8
2012	23123	4.5	30.2	19.2
2013	23123	5.0	30.2	16.4
2014	23123	5.5	30.2	15.2
2015	23123	6.0	30.2	13.1
2016	23123	10.0	30.2	3.1

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
2017	23211	0.0	29.7	76.8	2073	23223	0.0	31.4	75.3	2129	24022	0.0	28.8	77.8	2185	24212	0.0	27.8	77.6
2018	23211	0.5	29.7	67.3	2074	23223	0.5	31.4	69.8	2130	24022	0.5	28.8	70.5	2186	24212	0.5	27.8	69.5
2019	23211	1.0	29.7	60.4	2075	23223	1.0	31.4	63.1	2131	24022	1.0	28.8	65.5	2187	24212	1.0	27.8	61.5
2020	23211	1.5	29.7	54.9	2076	23223	1.5	31.4	57.3	2132	24022	1.5	28.8	59.4	2188	24212	1.5	27.8	55.8
2021	23211	2.0	29.7	47.1	2077	23223	2.0	31.4	52.4	2133	24022	2.0	28.8	54.8	2189	24212	2.0	27.8	48.1
2022	23211	2.5	29.7	42.8	2078	23223	2.5	31.4	45.1	2134	24022	2.5	28.8	51.7	2190	24212	2.5	27.8	45.3
2023	23211	3.0	29.7	37.3	2079	23223	3.0	31.4	41.5	2135	24022	3.0	28.8	47.1	2191	24212	3.0	27.8	40.5
2024	23211	3.5	29.7	31.9	2080	23223	3.5	31.4	37.3	2136	24022	3.5	28.8	42.5	2192	24212	3.5	27.8	35.6
2025	23211	4.0	29.7	27.6	2081	23223	4.0	31.4	35.5	2137	24022	4.0	28.8	39.4	2193	24212	4.0	27.8	30.8
2026	23211	4.5	29.7	23.7	2082	23223	4.5	31.4	32.3	2138	24022	4.5	28.8	35.5	2194	24212	4.5	27.8	27.2
2027	23211	5.0	29.7	20.9	2083	23223	5.0	31.4	29.0	2139	24022	5.0	28.8	31.7	2195	24212	5.0	27.8	24.4
2028	23211	5.5	29.7	18.6	2084	23223	5.5	31.4	25.9	2140	24022	5.5	28.8	27.8	2196	24212	5.5	27.8	21.1
2029	23211	6.0	29.7	15.9	2085	23223	6.0	31.4	23.5	2141	24022	6.0	28.8	24.8	2197	24212	6.0	27.8	18.3
2030	23211	10.0	29.7	6.5	2086	23223	10.0	31.4	11.0	2142	24022	10.0	28.8	8.6	2198	24212	10.0	27.8	5.8
2031	23222	0.0	30.4	76.1	2087	23212	0.0	31.6	75.1	2143	24011	0.0	29.0	77.3	2199	24221	0.0	28.3	77.5
2032	23222	0.5	30.4	69.0	2088	23212	0.5	31.6	65.7	2144	24011	0.5	29.0	68.8	2200	24221	0.5	28.3	69.6
2033	23222	1.0	30.4	62.3	2089	23212	1.0	31.6	57.4	2145	24011	1.0	29.0	62.9	2201	24221	1.0	28.3	62.1
2034	23222	1.5	30.4	55.6	2090	23212	1.5	31.6	50.7	2146	24011	1.5	29.0	56.3	2202	24221	1.5	28.3	56.9
2035	23222	2.0	30.4	50.5	2091	23212	2.0	31.6	43.6	2147	24011	2.0	29.0	51.2	2203	24221	2.0	28.3	51.0
2036	23222	2.5	30.4	44.6	2092	23212	2.5	31.6	37.7	2148	24011	2.5	29.0	47.3	2204	24221	2.5	28.3	45.8
2037	23222	3.0	30.4	39.4	2093	23212	3.0	31.6	32.6	2149	24011	3.0	29.0	43.0	2205	24221	3.0	28.3	41.8
2038	23222	3.5	30.4	35.5	2094	23212	3.5	31.6	28.7	2150	24011	3.5	29.0	39.1	2206	24221	3.5	28.3	37.9
2039	23222	4.0	30.4	31.6	2095	23212	4.0	31.6	24.7	2151	24011	4.0	29.0	35.2	2207	24221	4.0	28.3	31.9
2040	23222	4.5	30.4	27.6	2096	23212	4.5	31.6	21.6	2152	24011	4.5	29.0	31.3	2208	24221	4.5	28.3	27.5
2041	23222	5.0	30.4	23.7	2097	23212	5.0	31.6	13.4	2153	24011	5.0	29.0	27.7	2209	24221	5.0	28.3	24.8
2042	23222	5.5	30.4	20.6	2098	23212	5.5	31.6	15.1	2154	24011	5.5	29.0	23.8	2210	24221	5.5	28.3	22.0
2043	23222	6.0	30.4	19.0	2099	23212	6.0	31.6	13.7	2155	24011	6.0	29.0	21.1	2211	24221	6.0	28.3	18.0
2044	23222	10.0	30.4	8.0	2100	23212	10.0	31.6	5.8	2156	24011	10.0	29.0	7.0	2212	24221	10.0	28.3	6.1
2045	23213	0.0	30.5	76.2	2101	24021	0.0	30.2	75.4	2157	24013	0.0	27.3	78.5	2213	24211	0.0	28.7	77.8
2046	23213	0.5	30.5	71.5	2102	24021	0.5	30.2	67.4	2158	24013	0.5	27.3	70.6	2214	24211	0.5	28.7	70.0
2047	23213	1.0	30.5	67.2	2103	24021	1.0	30.2	60.8	2159	24013	1.0	27.3	63.5	2215	24211	1.0	28.7	65.0
2048	23213	1.5	30.5	62.1	2104	24021	1.5	30.2	53.8	2160	24013	1.5	27.3	58.4	2216	24211	1.5	28.7	58.4
2049	23213	2.0	30.5	56.6	2105	24021	2.0	30.2	48.7	2161	24013	2.0	27.3	51.3	2217	24211	2.0	28.7	54.5
2050	23213	2.5	30.5	52.3	2106	24021	2.5	30.2	42.8	2162	24013	2.5	27.3	47.0	2218	24211	2.5	28.7	50.6
2051	23213	3.0	30.5	48.0	2107	24021	3.0	30.2	33.1	2163	24013	3.0	27.3	43.1	2219	24211	3.0	28.7	46.0
2052	23213	3.5	30.5	44.1	2108	24021	3.5	30.2	34.2	2164	24013	3.5	27.3	41.1	2220	24211	3.5	28.7	41.7
2053	23213	4.0	30.5	40.2	2109	24021	4.0	30.2	30.3	2165	24013	4.0	27.3	38.3	2221	24211	4.0	28.7	35.9
2054	23213	4.5	30.5	36.3	2110	24021	4.5	30.2	26.4	2166	24013	4.5	27.3	33.2	2222	24211	4.5	28.7	32.8
2055	23213	5.0	30.5	32.4	2111	24021	5.0	30.2	22.5	2167	24013	5.0	27.3	27.3	2223	24211	5.0	28.7	29.7
2056	23213	5.5	30.5	28.5	2112	24021	5.5	30.2	13.6	2168	24013	5.5	27.3	26.9	2224	24211	5.5	28.7	27.0
2057	23213	6.0	30.5	25.4	2113	24021	6.0	30.2	16.3	2169	24013	6.0	27.3	23.4	2225	24211	6.0	28.7	23.5
2058	23213	10.0	30.5	9.0	2114	24021	10.0	30.2	4.5	2170	24013	10.0	27.3	7.6	2226	24211	10.0	28.7	8.0
2059	23221	0.0	30.9	76.0	2115	24023	0.0	30.3	75.3	2171	24012	0.0	28.7	77.0	2227	24213	0.0	28.0	78.0
2060	23221	0.5	30.9	70.2	2116	24023	0.5	30.3	69.3	2172	24012	0.5	28.7	68.6	2228	24213	0.5	28.0	72.8
2061	23221	1.0	30.9	65.2	2117	24023	1.0	30.3	64.2	2173	24012	1.0	28.7	61.0	2229	24213	1.0	28.0	66.9
2062	23221	1.5	30.9	61.3	2118	24023	1.5	30.3	58.4	2174	24012	1.5	28.7	53.0	2230	24213	1.5	28.0	61.8
2063	23221	2.0	30.9	56.7	2119	24023	2.0	30.3	54.5	2175	24012	2.0	28.7	40.6	2231	24213	2.0	28.0	57.5
2064	23221	2.5	30.9	52.4	2120	24023	2.5	30.3	49.8	2176	24012	2.5	28.7	43.4	2232	24213	2.5	28.0	53.5
2065	23221	3.0	30.9	48.1	2121	24023	3.0	30.3	45.9	2177	24012	3.0	28.7	38.2	2233	24213	3.0	28.0	49.6
2066	23221	3.5	30.9	43.9	2122	24023	3.5	30.3	42.3	2178	24012	3.5	28.7	33.8	2234	24213	3.5	28.0	45.7
2067	23221	4.0	30.9	40.0	2123	24023	4.0	30.3	38.4	2179	24012	4.0	28.7	29.4	2235	24213	4.0	28.0	41.3
2068	23221	4.5	30.9	36.5	2124	24023	4.5	30.3	34.9	2180	24012	4.5	28.7	25.0	2236	24213	4.5	28.0	37.8
2069	23221	5.0	30.9	33.4	2125	24023	5.0	30.3	31.4	2181	24012	5.0	28.7	21.8	2237	24213	5.0	28.0	34.6
2070	23221	5.5	30.9	30.3	2126	24023	5.5	30.3	29.1	2182	24012	5.5	28.7	19.4	2238	24213	5.5	28.0	30.7
2071	23221	6.0	30.9	26.4	2127	24023	6.0	30.3	25.3	2183	24012	6.0	28.7	17.0	2239	24213	6.0	28.0	28.0
2072	23221	10.0	30.9	10.9	2128	24023	10.0	30.3	9.9	2184	24012	10.0	28.7	5.4	2240	24213	10.0	28.0	11.0

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
2241	24222	0.0	27.2	78.6	2297	24312	0.0	28.2	73.0	2353	24413	0.0	28.4	77.3	2409	24421	0.0	28.2	77.4
2242	24222	0.5	27.2	70.3	2298	24312	0.5	28.2	72.1	2354	24413	0.5	28.4	69.3	2410	24421	0.5	28.2	72.6
2243	24222	1.0	27.2	66.4	2299	24312	1.0	28.2	67.0	2355	24413	1.0	28.4	63.7	2411	24421	1.0	28.2	66.6
2244	24222	1.5	27.2	59.7	2300	24312	1.5	28.2	62.3	2356	24413	1.5	28.4	57.3	2412	24421	1.5	28.2	61.4
2245	24222	2.0	27.2	55.7	2301	24312	2.0	28.2	57.3	2357	24413	2.0	28.4	53.3	2413	24421	2.0	28.2	57.4
2246	24222	2.5	27.2	50.6	2302	24312	2.5	28.2	53.4	2358	24413	2.5	28.4	47.3	2414	24421	2.5	28.2	52.6
2247	24222	3.0	27.2	45.1	2303	24312	3.0	28.2	48.7	2359	24413	3.0	28.4	41.7	2415	24421	3.0	28.2	48.6
2248	24222	3.5	27.2	41.2	2304	24312	3.5	28.2	45.2	2360	24413	3.5	28.4	37.3	2416	24421	3.5	28.2	42.2
2249	24222	4.0	27.2	36.5	2305	24312	4.0	28.2	40.5	2361	24413	4.0	28.4	33.3	2417	24421	4.0	28.2	39.4
2250	24222	4.5	27.2	34.9	2306	24312	4.5	28.2	37.0	2362	24413	4.5	28.4	29.3	2418	24421	4.5	28.2	37.4
2251	24222	5.0	27.2	31.3	2307	24312	5.0	28.2	33.4	2363	24413	5.0	28.4	25.3	2419	24421	5.0	28.2	33.4
2252	24222	5.5	27.2	28.2	2308	24312	5.5	28.2	29.9	2364	24413	5.5	28.4	22.1	2420	24421	5.5	28.2	29.4
2253	24222	6.0	27.2	24.3	2309	24312	6.0	28.2	27.2	2365	24413	6.0	28.4	20.5	2421	24421	6.0	28.2	25.8
2254	24222	10.0	27.2	9.3	2310	24312	10.0	28.2	9.6	2366	24413	10.0	28.4	8.1	2422	24421	10.0	28.2	14.2
2255	24223	0.0	27.6	77.9	2311	24313	0.0	28.8	77.2	2367	24423	0.0	27.9	77.7	2423	24422	0.0	29.0	76.8
2256	24223	0.5	27.6	68.3	2312	24313	0.5	28.8	72.1	2368	24423	0.5	27.9	69.7	2424	24422	0.5	29.0	67.8
2257	24223	1.0	27.6	60.3	2313	24313	1.0	28.8	67.4	2369	24423	1.0	27.9	62.1	2425	24422	1.0	29.0	59.1
2258	24223	1.5	27.6	52.7	2314	24313	1.5	28.8	63.4	2370	24423	1.5	27.9	57.7	2426	24422	1.5	29.0	52.1
2259	24223	2.0	27.6	47.5	2315	24313	2.0	28.8	59.4	2371	24423	2.0	27.9	51.7	2427	24422	2.0	29.0	45.5
2260	24223	2.5	27.6	41.1	2316	24313	2.5	28.8	56.3	2372	24423	2.5	27.9	45.7	2428	24422	2.5	29.0	39.8
2261	24223	3.0	27.6	36.7	2317	24313	3.0	28.8	52.3	2373	24423	3.0	27.9	41.7	2429	24422	3.0	29.0	35.2
2262	24223	3.5	27.6	32.3	2318	24313	3.5	28.8	48.4	2374	24423	3.5	27.9	36.1	2430	24422	3.5	29.0	28.6
2263	24223	4.0	27.6	27.5	2319	24313	4.0	28.8	44.4	2375	24423	4.0	27.9	31.7	2431	24422	4.0	29.0	24.9
2264	24223	4.5	27.6	22.7	2320	24313	4.5	28.8	41.3	2376	24423	4.5	27.9	27.7	2432	24422	4.5	29.0	22.0
2265	24223	5.0	27.6	20.3	2321	24313	5.0	28.8	38.5	2377	24423	5.0	27.9	24.5	2433	24422	5.0	29.0	19.1
2266	24223	5.5	27.6	16.7	2322	24313	5.5	28.8	35.7	2378	24423	5.5	27.9	21.7	2434	24422	5.5	29.0	15.8
2267	24223	6.0	27.6	14.7	2323	24313	6.0	28.8	32.6	2379	24423	6.0	27.9	17.7	2435	24422	6.0	29.0	14.2
2268	24223	10.0	27.6	5.9	2324	24313	10.0	28.8	15.4	2380	24423	10.0	27.9	6.5	2436	24422	10.0	29.0	6.7
2269	24321	0.0	30.0	76.4	2325	24323	0.0	27.0	73.2	2381	24411	0.0	28.1	77.5	2437	24121	0.0	21.3	81.5
2270	24321	0.5	30.0	68.5	2326	24323	0.5	27.0	69.8	2382	24411	0.5	28.1	71.1	2438	24121	0.5	21.3	72.8
2271	24321	1.0	30.0	61.8	2327	24323	1.0	27.0	62.1	2383	24411	1.0	28.1	67.1	2439	24121	1.0	21.3	64.1
2272	24321	1.5	30.0	55.5	2328	24323	1.5	27.0	56.5	2384	24411	1.5	28.1	63.5	2440	24121	1.5	21.3	56.7
2273	24321	2.0	30.0	50.8	2329	24323	2.0	27.0	50.8	2385	24411	2.0	28.1	59.5	2441	24121	2.0	21.3	51.5
2274	24321	2.5	30.0	45.3	2330	24323	2.5	27.0	45.2	2386	24411	2.5	28.1	56.7	2442	24121	2.5	21.3	44.1
2275	24321	3.0	30.0	40.2	2331	24323	3.0	27.0	41.1	2387	24411	3.0	28.1	53.1	2443	24121	3.0	21.3	38.0
2276	24321	3.5	30.0	35.8	2332	24323	3.5	27.0	37.1	2388	24411	3.5	28.1	49.1	2444	24121	3.5	21.3	33.7
2277	24321	4.0	30.0	31.5	2333	24323	4.0	27.0	31.9	2389	24411	4.0	28.1	45.5	2445	24121	4.0	21.3	28.9
2278	24321	4.5	30.0	27.6	2334	24323	4.5	27.0	27.0	2390	24411	4.5	28.1	42.3	2446	24121	4.5	21.3	25.0
2279	24321	5.0	30.0	24.4	2335	24323	5.0	27.0	24.6	2391	24411	5.0	28.1	38.3	2447	24121	5.0	21.3	20.6
2280	24321	5.5	30.0	21.7	2336	24323	5.5	27.0	20.6	2392	24411	5.5	28.1	35.9	2448	24121	5.5	21.3	16.3
2281	24321	6.0	30.0	19.3	2337	24323	6.0	27.0	15.9	2393	24411	6.0	28.1	33.1	2449	24121	6.0	21.3	14.5
2282	24321	10.0	30.0	6.7	2338	24323	10.0	27.0	5.9	2394	24411	10.0	28.1	15.1	2450	24121	10.0	21.3	3.2
2283	24322	0.0	29.8	76.2	2339	24311	0.0	28.5	77.2	2395	24412	0.0	27.5	78.0	2451	24122	0.0	21.0	82.9
2284	24322	0.5	29.8	71.8	2340	24311	0.5	28.5	68.4	2396	24412	0.5	27.5	73.2	2452	24122	0.5	21.0	74.8
2285	24322	1.0	29.8	64.2	2341	24311	1.0	28.5	59.2	2397	24412	1.0	27.5	68.4	2453	24122	1.0	21.0	67.9
2286	24322	1.5	29.8	58.5	2342	24311	1.5	28.5	52.4	2398	24412	1.5	27.5	64.4	2454	24122	1.5	21.0	61.0
2287	24322	2.0	29.8	53.0	2343	24311	2.0	28.5	45.8	2399	24412	2.0	27.5	60.4	2455	24122	2.0	21.0	55.7
2288	24322	2.5	29.8	48.2	2344	24311	2.5	28.5	40.4	2400	24412	2.5	27.5	56.4	2456	24122	2.5	21.0	50.8
2289	24322	3.0	29.8	44.2	2345	24311	3.0	28.5	35.4	2401	24412	3.0	27.5	52.8	2457	24122	3.0	21.0	46.3
2290	24322	3.5	29.8	40.2	2346	24311	3.5	28.5	31.6	2402	24412	3.5	27.5	48.8	2458	24122	3.5	21.0	41.9
2291	24322	4.0	29.8	35.4	2347	24311	4.0	28.5	25.6	2403	24412	4.0	27.5	45.2	2459	24122	4.0	21.0	37.4
2292	24322	4.5	29.8	31.4	2348	24311	4.5	28.5	21.2	2404	24412	4.5	27.5	41.2	2460	24122	4.5	21.0	33.3
2293	24322	5.0	29.8	27.8	2349	24311	5.0	28.5	13.4	2405	24412	5.0	27.5	38.4	2461	24122	5.0	21.0	30.1
2294	24322	5.5	29.8	24.2	2350	24311	5.5	28.5	16.4	2406	24412	5.5	27.5	36.0	2462	24122	5.5	21.0	26.8
2295	24322	6.0	29.8	21.4	2351	24311	6.0	28.5	12.8	2407	24412	6.0	27.5	33.2	2463	24122	6.0	21.0	23.2
2296	24322	10.0	29.8	8.2	2352	24311	10.0	28.5	4.4	2408	24412	10.0	27.5	16.0	2464	24122	10.0	21.0	7.3

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
2465	24123	0.0	19.9	83.7	2521	25113	0.0	22.9	81.2	2577	25112	0.0	23.1	81.7	2633	25322	0.0	21.0	83.3
2466	24123	0.5	19.9	76.7	2522	25113	0.5	22.9	70.6	2578	25112	0.5	23.1	74.0	2634	25322	0.5	21.0	75.4
2467	24123	1.0	19.9	70.2	2523	25113	1.0	22.9	60.7	2579	25112	1.0	23.1	66.8	2635	25322	1.0	21.0	69.4
2468	24123	1.5	19.9	65.2	2524	25113	1.5	22.9	54.6	2580	25112	1.5	23.1	62.5	2636	25322	1.5	21.0	63.9
2469	24123	2.0	19.9	57.9	2525	25113	2.0	22.9	48.0	2581	25112	2.0	23.1	56.0	2637	25322	2.0	21.0	58.7
2470	24123	2.5	19.9	53.8	2526	25113	2.5	22.9	43.1	2582	25112	2.5	23.1	52.4	2638	25322	2.5	21.0	54.4
2471	24123	3.0	19.9	49.7	2527	25113	3.0	22.9	38.2	2583	25112	3.0	23.1	48.8	2639	25322	3.0	21.0	50.4
2472	24123	3.5	19.9	45.6	2528	25113	3.5	22.9	32.9	2584	25112	3.5	23.1	45.2	2640	25322	3.5	21.0	46.0
2473	24123	4.0	19.9	41.5	2529	25113	4.0	22.9	28.0	2585	25112	4.0	23.1	41.6	2641	25322	4.0	21.0	41.7
2474	24123	4.5	19.9	37.4	2530	25113	4.5	22.9	24.3	2586	25112	4.5	23.1	36.2	2642	25322	4.5	21.0	37.7
2475	24123	5.0	19.9	33.3	2531	25113	5.0	22.9	21.4	2587	25112	5.0	23.1	32.5	2643	25322	5.0	21.0	34.1
2476	24123	5.5	19.9	30.4	2532	25113	5.5	22.9	18.5	2588	25112	5.5	23.1	28.3	2644	25322	5.5	21.0	30.6
2477	24123	6.0	19.9	27.1	2533	25113	6.0	22.9	15.7	2589	25112	6.0	23.1	27.1	2645	25322	6.0	21.0	26.6
2478	24123	10.0	19.9	9.9	2534	25113	10.0	22.9	5.6	2590	25112	10.0	23.1	12.3	2646	25322	10.0	21.0	10.7
2479	24111	0.0	20.7	83.2	2535	25111	0.0	22.9	81.2	2591	25121	0.0	21.7	82.6	2647	25321	0.0	21.0	83.2
2480	24111	0.5	20.7	76.8	2536	25111	0.5	22.9	73.4	2592	25121	0.5	21.7	72.2	2648	25321	0.5	21.0	76.0
2481	24111	1.0	20.7	71.9	2537	25111	1.0	22.9	64.4	2593	25121	1.0	21.7	62.6	2649	25321	1.0	21.0	70.0
2482	24111	1.5	20.7	67.0	2538	25111	1.5	22.9	62.0	2594	25121	1.5	21.7	56.0	2650	25321	1.5	21.0	64.0
2483	24111	2.0	20.7	63.0	2539	25111	2.0	22.9	55.8	2595	25121	2.0	21.7	49.4	2651	25321	2.0	21.0	59.2
2484	24111	2.5	20.7	58.5	2540	25111	2.5	22.9	51.7	2596	25121	2.5	21.7	46.9	2652	25321	2.5	21.0	54.8
2485	24111	3.0	20.7	54.5	2541	25111	3.0	22.9	47.6	2597	25121	3.0	21.7	41.4	2653	25321	3.0	21.0	50.0
2486	24111	3.5	20.7	50.9	2542	25111	3.5	22.9	43.5	2598	25121	3.5	21.7	35.9	2654	25321	3.5	21.0	46.0
2487	24111	4.0	20.7	47.2	2543	25111	4.0	22.9	39.4	2599	25121	4.0	21.7	32.7	2655	25321	4.0	21.0	42.0
2488	24111	4.5	20.7	43.6	2544	25111	4.5	22.9	35.3	2600	25121	4.5	21.7	27.8	2656	25321	4.5	21.0	38.0
2489	24111	5.0	20.7	39.5	2545	25111	5.0	22.9	31.2	2601	25121	5.0	21.7	24.0	2657	25321	5.0	21.0	34.4
2490	24111	5.5	20.7	36.7	2546	25111	5.5	22.9	27.5	2602	25121	5.5	21.7	20.2	2658	25321	5.5	21.0	30.8
2491	24111	6.0	20.7	34.3	2547	25111	6.0	22.9	21.0	2603	25121	6.0	21.7	17.4	2659	25321	6.0	21.0	27.6
2492	24111	10.0	20.7	15.2	2548	25111	10.0	22.9	7.9	2604	25121	10.0	21.7	7.8	2660	25321	10.0	21.0	10.0
2493	24113	0.0	20.4	83.3	2549	25122	0.0	23.6	81.1	2605	25323	0.0	21.7	82.8	2661	25312	0.0	20.7	83.4
2494	24113	0.5	20.4	75.6	2550	25122	0.5	23.6	73.5	2606	25323	0.5	21.7	72.5	2662	25312	0.5	20.7	75.1
2495	24113	1.0	20.4	67.9	2551	25122	1.0	23.6	63.7	2607	25323	1.0	21.7	62.1	2663	25312	1.0	20.7	66.8
2496	24113	1.5	20.4	59.4	2552	25122	1.5	23.6	63.5	2608	25323	1.5	21.7	54.6	2664	25312	1.5	20.7	60.2
2497	24113	2.0	20.4	53.2	2553	25122	2.0	23.6	53.7	2609	25323	2.0	21.7	48.7	2665	25312	2.0	20.7	54.3
2498	24113	2.5	20.4	47.9	2554	25122	2.5	23.6	53.5	2610	25323	2.5	21.7	41.5	2666	25312	2.5	20.7	49.4
2499	24113	3.0	20.4	44.0	2555	25122	3.0	23.6	49.5	2611	25323	3.0	21.7	36.3	2667	25312	3.0	20.7	45.2
2500	24113	3.5	20.4	40.2	2556	25122	3.5	23.6	45.5	2612	25323	3.5	21.7	30.8	2668	25312	3.5	20.7	38.5
2501	24113	4.0	20.4	36.3	2557	25122	4.0	23.6	41.5	2613	25323	4.0	21.7	25.6	2669	25312	4.0	20.7	37.7
2502	24113	4.5	20.4	32.0	2558	25122	4.5	23.6	37.5	2614	25323	4.5	21.7	21.7	2670	25312	4.5	20.7	33.7
2503	24113	5.0	20.4	28.2	2559	25122	5.0	23.6	33.5	2615	25323	5.0	21.7	18.5	2671	25312	5.0	20.7	25.2
2504	24113	5.5	20.4	24.3	2560	25122	5.5	23.6	30.3	2616	25323	5.5	21.7	15.7	2672	25312	5.5	20.7	24.8
2505	24113	6.0	20.4	20.9	2561	25122	6.0	23.6	27.5	2617	25323	6.0	21.7	13.7	2673	25312	6.0	20.7	23.5
2506	24113	10.0	20.4	5.5	2562	25122	10.0	23.6	9.5	2618	25323	10.0	21.7	4.2	2674	25312	10.0	20.7	7.8
2507	24112	0.0	20.7	83.2	2563	25123	0.0	22.9	81.6	2619	25311	0.0	21.9	82.5	2675	25313	0.0	21.1	83.1
2508	24112	0.5	20.7	75.1	2564	25123	0.5	22.9	74.0	2620	25311	0.5	21.9	72.5	2676	25313	0.5	21.1	71.1
2509	24112	1.0	20.7	68.3	2565	25123	1.0	22.9	67.6	2621	25311	1.0	21.9	64.5	2677	25313	1.0	21.1	61.5
2510	24112	1.5	20.7	61.0	2566	25123	1.5	22.9	61.9	2622	25311	1.5	21.9	58.5	2678	25313	1.5	21.1	54.3
2511	24112	2.0	20.7	56.1	2567	25123	2.0	22.9	57.9	2623	25311	2.0	21.9	52.5	2679	25313	2.0	21.1	47.5
2512	24112	2.5	20.7	48.0	2568	25123	2.5	22.9	53.9	2624	25311	2.5	21.9	48.1	2680	25313	2.5	21.1	43.1
2513	24112	3.0	20.7	44.0	2569	25123	3.0	22.9	49.5	2625	25311	3.0	21.9	43.7	2681	25313	3.0	21.1	37.5
2514	24112	3.5	20.7	35.9	2570	25123	3.5	22.9	45.5	2626	25311	3.5	21.9	39.7	2682	25313	3.5	21.1	32.7
2515	24112	4.0	20.7	35.5	2571	25123	4.0	22.9	41.8	2627	25311	4.0	21.9	35.7	2683	25313	4.0	21.1	28.3
2516	24112	4.5	20.7	31.4	2572	25123	4.5	22.9	37.8	2628	25311	4.5	21.9	32.5	2684	25313	4.5	21.1	24.3
2517	24112	5.0	20.7	27.8	2573	25123	5.0	22.9	33.8	2629	25311	5.0	21.9	27.7	2685	25313	5.0	21.1	21.9
2518	24112	5.5	20.7	23.7	2574	25123	5.5	22.9	30.2	2630	25311	5.5	21.9	25.3	2686	25313	5.5	21.1	17.9
2519	24112	6.0	20.7	20.9	2575	25123	6.0	22.9	27.8	2631	25311	6.0	21.9	22.5	2687	25313	6.0	21.1	15.1
2520	24112	10.0	20.7	6.3	2576	25123	10.0	22.9	12.9	2632	25311	10.0	21.9	6.9	2688	25313	10.0	21.1	6.7

OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB	OBS	TREAT	TIME	DRMT	MCWB
2689	25211	0.0	24.7	80.2	2745	25222	0.0	24.7	80.6	2801	25421	0.0	22.8	81.6	2857	25022	0.0	24.1	80.6
2690	25211	0.5	24.7	71.4	2746	25222	0.5	24.7	72.7	2802	25421	0.5	22.8	75.4	2858	25022	0.5	24.1	70.9
2691	25211	1.0	24.7	63.4	2747	25222	1.0	24.7	63.6	2803	25421	1.0	22.8	72.3	2859	25022	1.0	24.1	60.8
2692	25211	1.5	24.7	56.6	2748	25222	1.5	24.7	59.7	2804	25421	1.5	22.8	66.7	2860	25022	1.5	24.1	53.5
2693	25211	2.0	24.7	51.4	2749	25222	2.0	24.7	55.7	2805	25421	2.0	22.8	62.3	2861	25022	2.0	24.1	47.5
2694	25211	2.5	24.7	46.2	2750	25222	2.5	24.7	51.0	2806	25421	2.5	22.8	58.2	2862	25022	2.5	24.1	39.8
2695	25211	3.0	24.7	40.6	2751	25222	3.0	24.7	47.1	2807	25421	3.0	22.8	54.2	2863	25022	3.0	24.1	37.4
2696	25211	3.5	24.7	35.8	2752	25222	3.5	24.7	43.9	2808	25421	3.5	22.8	51.0	2864	25022	3.5	24.1	32.6
2697	25211	4.0	24.7	31.4	2753	25222	4.0	24.7	40.0	2809	25421	4.0	22.8	46.5	2865	25022	4.0	24.1	27.7
2698	25211	4.5	24.7	27.4	2754	25222	4.5	24.7	35.1	2810	25421	4.5	22.8	43.7	2866	25022	4.5	24.1	23.7
2699	25211	5.0	24.7	23.4	2755	25222	5.0	24.7	32.9	2811	25421	5.0	22.8	40.1	2867	25022	5.0	24.1	20.5
2700	25211	5.5	24.7	19.8	2756	25222	5.5	24.7	30.2	2812	25421	5.5	22.8	36.0	2868	25022	5.5	24.1	16.5
2701	25211	6.0	24.7	17.4	2757	25222	6.0	24.7	27.0	2813	25421	6.0	22.8	34.0	2869	25022	6.0	24.1	15.2
2702	25211	10.0	24.7	4.6	2758	25222	10.0	24.7	8.5	2814	25421	10.0	22.8	15.9	2870	25022	10.0	24.1	3.5
2703	25223	0.0	24.2	80.9	2759	25212	0.0	23.8	81.3	2815	25412	0.0	22.8	81.8	2871	25023	0.0	23.2	81.4
2704	25223	0.5	24.2	74.9	2760	25212	0.5	23.8	73.4	2816	25412	0.5	22.8	75.8	2872	25023	0.5	23.2	75.0
2705	25223	1.0	24.2	68.6	2761	25212	1.0	23.8	65.5	2817	25412	1.0	22.8	69.8	2873	25023	1.0	23.2	69.4
2706	25223	1.5	24.2	64.7	2762	25212	1.5	23.8	60.0	2818	25412	1.5	22.8	65.8	2874	25023	1.5	23.2	63.0
2707	25223	2.0	24.2	59.9	2763	25212	2.0	23.8	53.7	2819	25412	2.0	22.8	61.0	2875	25023	2.0	23.2	58.6
2708	25223	2.5	24.2	56.0	2764	25212	2.5	23.8	49.8	2820	25412	2.5	22.8	57.0	2876	25023	2.5	23.2	53.4
2709	25223	3.0	24.2	52.0	2765	25212	3.0	23.8	45.4	2821	25412	3.0	22.8	52.6	2877	25023	3.0	23.2	49.8
2710	25223	3.5	24.2	48.1	2766	25212	3.5	23.8	41.1	2822	25412	3.5	22.8	49.4	2878	25023	3.5	23.2	45.8
2711	25223	4.0	24.2	44.1	2767	25212	4.0	23.8	35.4	2823	25412	4.0	22.8	45.4	2879	25023	4.0	23.2	43.0
2712	25223	4.5	24.2	40.2	2768	25212	4.5	23.8	32.0	2824	25412	4.5	22.8	41.8	2880	25023	4.5	23.2	38.6
2713	25223	5.0	24.2	37.0	2769	25212	5.0	23.8	28.9	2825	25412	5.0	22.8	37.8	2881	25023	5.0	23.2	35.0
2714	25223	5.5	24.2	33.4	2770	25212	5.5	23.8	25.4	2826	25412	5.5	22.8	35.8	2882	25023	5.5	23.2	31.8
2715	25223	6.0	24.2	30.7	2771	25212	6.0	23.8	22.2	2827	25412	6.0	22.8	33.8	2883	25023	6.0	23.2	29.4
2716	25223	10.0	24.2	12.5	2772	25212	10.0	23.8	7.6	2828	25412	10.0	22.8	16.6	2884	25023	10.0	23.2	10.2
2717	25221	0.0	24.9	80.4	2773	25422	0.0	25.9	79.1	2829	25411	0.0	22.9	81.7	2885	25013	0.0	22.8	81.8
2718	25221	0.5	24.9	73.7	2774	25422	0.5	25.9	69.0	2830	25411	0.5	22.9	73.8	2886	25013	0.5	22.8	73.8
2719	25221	1.0	24.9	69.0	2775	25422	1.0	25.9	61.8	2831	25411	1.0	22.9	68.5	2887	25013	1.0	22.8	68.6
2720	25221	1.5	24.9	64.6	2776	25422	1.5	25.9	54.9	2832	25411	1.5	22.9	61.5	2888	25013	1.5	22.8	63.4
2721	25221	2.0	24.9	61.1	2777	25422	2.0	25.9	49.7	2833	25411	2.0	22.9	57.0	2889	25013	2.0	22.8	59.4
2722	25221	2.5	24.9	56.0	2778	25422	2.5	25.9	43.2	2834	25411	2.5	22.9	52.9	2890	25013	2.5	22.8	53.8
2723	25221	3.0	24.9	52.0	2779	25422	3.0	25.9	33.8	2835	25411	3.0	22.9	48.7	2891	25013	3.0	22.8	50.2
2724	25221	3.5	24.9	48.9	2780	25422	3.5	25.9	34.8	2836	25411	3.5	22.9	44.6	2892	25013	3.5	22.8	45.8
2725	25221	4.0	24.9	45.0	2781	25422	4.0	25.9	30.3	2837	25411	4.0	22.9	40.5	2893	25013	4.0	22.8	42.2
2726	25221	4.5	24.9	39.1	2782	25422	4.5	25.9	26.7	2838	25411	4.5	22.9	35.9	2894	25013	4.5	22.8	39.4
2727	25221	5.0	24.9	38.3	2783	25422	5.0	25.9	22.7	2839	25411	5.0	22.9	33.4	2895	25013	5.0	22.8	35.8
2728	25221	5.5	24.9	34.3	2784	25422	5.5	25.9	19.4	2840	25411	5.5	22.9	28.2	2896	25013	5.5	22.8	32.6
2729	25221	6.0	24.9	31.6	2785	25422	6.0	25.9	17.8	2841	25411	6.0	22.9	27.7	2897	25013	6.0	22.8	28.6
2730	25221	10.0	24.9	13.5	2786	25422	10.0	25.9	5.5	2842	25411	10.0	22.9	11.6	2898	25013	10.0	22.8	11.8
2731	25213	0.0	24.1	81.0	2787	25413	0.0	22.4	82.1	2843	25423	0.0	23.0	81.6	2899	25021	0.0	22.5	82.3
2732	25213	0.5	24.1	75.1	2788	25413	0.5	22.4	74.1	2844	25423	0.5	23.0	72.8	2900	25021	0.5	22.5	77.2
2733	25213	1.0	24.1	69.6	2789	25413	1.0	22.4	65.1	2845	25423	1.0	23.0	65.6	2901	25021	1.0	22.5	72.4
2734	25213	1.5	24.1	64.9	2790	25413	1.5	22.4	60.1	2846	25423	1.5	23.0	60.8	2902	25021	1.5	22.5	67.7
2735	25213	2.0	24.1	60.9	2791	25413	2.0	22.4	54.1	2847	25423	2.0	23.0	55.6	2903	25021	2.0	22.5	63.8
2736	25213	2.5	24.1	57.4	2792	25413	2.5	22.4	50.1	2848	25423	2.5	23.0	49.6	2904	25021	2.5	22.5	59.8
2737	25213	3.0	24.1	53.5	2793	25413	3.0	22.4	46.1	2849	25423	3.0	23.0	44.4	2905	25021	3.0	22.5	56.7
2738	25213	3.5	24.1	50.3	2794	25413	3.5	22.4	42.1	2850	25423	3.5	23.0	40.4	2906	25021	3.5	22.5	52.8
2739	25213	4.0	24.1	47.2	2795	25413	4.0	22.4	38.1	2851	25423	4.0	23.0	36.0	2907	25021	4.0	22.5	48.8
2740	25213	4.5	24.1	44.0	2796	25413	4.5	22.4	34.1	2852	25423	4.5	23.0	30.0	2908	25021	4.5	22.5	44.9
2741	25213	5.0	24.1	40.5	2797	25413	5.0	22.4	30.1	2853	25423	5.0	23.0	27.6	2909	25021	5.0	22.5	42.1
2742	25213	5.5	24.1	37.3	2798	25413	5.5	22.4	25.9	2854	25423	5.5	23.0	24.4	2910	25021	5.5	22.5	39.8
2743	25213	6.0	24.1	34.6	2799	25413	6.0	22.4	25.7	2855	25423	6.0	23.0	20.8	2911	25021	6.0	22.5	37.0
2744	25213	10.0	24.1	16.9	2800	25413	10.0	22.4	10.1	2856	25423	10.0	23.0	8.4	2912	25021	10.0	22.5	17.3

OBS	TREAT	TIME	DRMT	MCWB
2913	25012	0.0	22.0	82.1
2914	25012	0.5	22.0	72.0
2915	25012	1.0	22.0	63.0
2916	25012	1.5	22.0	55.7
2917	25012	2.0	22.0	49.6
2918	25012	2.5	22.0	45.5
2919	25012	3.0	22.0	42.3
2920	25012	3.5	22.0	35.8
2921	25012	4.0	22.0	33.3
2922	25012	4.5	22.0	30.1
2923	25012	5.0	22.0	26.4
2924	25012	5.5	22.0	24.8
2925	25012	6.0	22.0	21.1
2926	25012	10.0	22.0	8.1
2927	25011	0.0	22.0	82.4
2928	25011	0.5	22.0	73.0
2929	25011	1.0	22.0	61.4
2930	25011	1.5	22.0	58.5
2931	25011	2.0	22.0	48.2
2932	25011	2.5	22.0	42.9
2933	25011	3.0	22.0	37.5
2934	25011	3.5	22.0	32.6
2935	25011	4.0	22.0	27.6
2936	25011	4.5	22.0	24.7
2937	25011	5.0	22.0	21.4
2938	25011	5.5	22.0	19.4
2939	25011	6.0	22.0	15.3
2940	25011	10.0	22.0	4.2

OBS is the observation number associated with a particular piece of data.

TREAT is a five digit code where the 1st digit is season number, 2nd is the replication number, 3rd is the roll number, 4th is the pass number and 5th is the feed rate number.

TIME is given as hours of drying time in the partial drying oven.

DRMT is the dry matter content on a weight basis of the original sample and is in grams.

MCWB is the moisture content of the sample on a wet weight base at the time indicated.

VITA

Freidoun Saatlou Aviki

Candidate for the Degree of

Master of Science

Thesis: THE EFFECT OF CONDITIONING ROLLS, FEED RATE AND THE NUMBER OF PASSES ON FORAGE DRYING RATE

Major Field: Agricultural Engineering

Biographical:

Personal Data: Born in Rezaieyh, Iran, December 23, 1945, the son of Mesrob and Lida Aviki and married Sandra on August 6, 1972.

Education: Graduated from Rezaieyh High School, Rezaieyh, Iran, 1965; received the Bachelor of Science Degree in Agricultural Mechanics and Farm Machinery from the University of Tehran, Karaj, Iran, in June, 1969; completed the requirements for the Master of Science Degree from Oklahoma State University in May, 1978.

Professional Experience: Served for two years (1969-1971) for the Iranian Army in Agricultural Extension Group. Employee of University of Rezaieyh College of Agricultural and Animal Husbandry as an instructor (1971 - now).